1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6

MICROCOPY RESOLUTION TEST CHART

DOCUMENT RESUME

ED 103 394 SP 009 001

AUTHOR	Klaus, David J.
TITLE	Students as Teaching Resources; A Survey of Teaching Models Using Non-Professionals (Peer Tutoring).
INSTITUTION	American Institutes for Research in the Behavioral Sciences, Pittsburgh, Pa.
SPONS AGENCY	Agency for International Development (Dept. of State), Washington, D.C.
REPORT NO	AIR-R-40900-10-73-FR
PUB DATE	Oct 73
NOTE	167p.
EDRS PRICE	MF-$0.76 HC-$8.24 PLUS POSTAGE
DESCRIPTORS	*Cross Age Teaching; *Developing Nations; Educational Research; *Peer Teaching; Primary Education; Tutoring

ABSTRACT

This preliminary survey was designed to explore the possible use of students as teaching resources in the developing countries. In carrying out the survey, available literature was reviewed, visits made to selected ongoing projects in the United States, and interviews conducted overseas with indigenous educational researchers in Ghana, Sierra Leone, Nigeria, Viet Nam, Thailand, Indonesia, the Philippines, and Korea to determine the feasibility and appropriateness of this approach to meeting the educational needs of primary-aged children in underdeveloped areas. On the basis of successes already reported and an analysis of what kinds of programs would be most useful in developing countries considering their needs and resources, four general models of peer teaching were developed. The results of the overseas interviews suggested that versions of any of the four models could be used in almost any developing country, and that no one model held particular promise for a majority of the countries surveyed. Differences in requirements, traditions, and capabilities would strongly influence the potential applicability and effectiveness of any approach. With the help of information obtained during the survey, a research design was prepared which suggested the systematic exploration of peer teaching in developing countries. (Author/DDO)

ED103394

BEST COPY AVAILABLE

AIR 40900-10/73-FR

STUDENTS AS TEACHING RESOURCES

A Survey of Teaching Models Using Non-Professionals (Peer Tutoring)

FINAL REPORT
To The
United States Agency for International Development
Work Order No. 1 of Contract No. AID/cm/otr-C-73-201
Project No. 931-17-690-570

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

David J. Klaus
American Institutes for Research
Pittsburgh, Pennsylvania 15219

October 1973

SP 009 001

BEST COPY AVAILABLE

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

I. INTRODUCTION 1
II. PROGRAM GOALS 5
III. AN OVERVIEW OF PAST AND PRESENT USES OF STUDENTS AS TEACHING RESOURCES 19
  A. Historical Background 19
  B. Recent Interest in the Tutorial Process 24
  C. The Development of Tutor-Based Systems 36
  D. Discussion of Alternative Programs 59
IV. TENTATIVE MODELS 65
V. FIELD SURVEYS IN DEVELOPING COUNTRIES 81
  A. Ghana 83
  B. Sierra Leone 94
  C. Nigeria 102
  D. Viet Nam 107
  E. Thailand 114
  F. Indonesia 119
  G. The Philippines 125
  H. Korea 131
VI. CONCLUSIONS FROM THE SURVEY 139
VII. SUGGESTED RESEARCH DESIGN 151

REFERENCES 161

ACKNOWLEDGEMENTS

This report could not have been prepared without the cooperation and contributions of a number of professional researchers and educators both here and abroad.

- Dr. Vernon L. Allen of the University of Wisconsin very kindly extended an invitation to attend the conference he chaired in Madison on 3 and 4 August, 1973 titled Tutoring and Inter-Age Interaction. As described in this report, several of the presentations and discussions were directly concerned with non-professional tutoring and, therefore, the conference was extremely helpful as an overview of ongoing activities and approaches. Dr. Allen is in the process of compiling the presentation in book form for publication early in 1974; this volume will be an important reference for any future work involving students as teaching resources. The cordiality of the participants at what was to have been a closed working conference also was very much appreciated. These participants were, in addition to Dr. Allen:

  - Peggy Lippitt, University of Michigan
  - Ralph J. Melaragno, Pacoima, California
  - Grant Von Harrison, Brigham Young University
  - Robert D. Cloward, Rhode Island College
  - Norma Feshbach, University of California, Los Angeles
  - Willard W. Hartup, University of Minnesota
  - Fred L. Strodtbeck, University of Chicago
  - Theodore R. Sarbin, University of California, Santa Cruz
  - Fred C. Niedermeyer, South West Regional Laboratory
  - Emory L. Cowan, University of Rochester

Visits were made to discuss current programs with a number of key professionals and members of their staffs. Their hospitality and helpfulness in supplying details concerning their work contributed significantly to this report. These visits included:

- Dr. Fred C. Neidermeyer, South West Regional Laboratory,
  Los Alimetos, California (7 August 1973)

BEST COPY AVAILABLE

- Dr. Grant Von Harrison, Brigham Young University, Provo, Utah (8 August 1973)
- Dr. R. Louis Bright and Mr. Jerome A. Colosimo, Western Institute for Science and Technology, Waco, Texas (9 August 1973)

• Dr. Leon Henkin of the Department of Mathematics, University of California at Berkeley kindly agreed to be interviewed over the telephone concerning his Peer Teaching project which is described in this report.

During the overseas visits, a number of individuals gave willingly of their time and rearranged their sometimes complex schedules to provide data on primary education in their countries and to discuss potential uses of students as teaching resources to meet their educational problems. Many of their excellent suggestions and comments have been incorporated into Section V of this report.

• Dr. Christian O. Agbenyega coordinated the interviews for West Africa and served as the principal informant for Ghana. He holds a Ph.D. in education from Syracuse University.

• Mrs. Becky Dyasi, who is a graduate of the University of Sierra Leone with a B.S. in Education and completed a year of graduate study at the University of London in curriculum development, provided most of the information on Sierra Leone.

• Mr. Joseph Aderemi Akinlade, who has a B.S. from Fourah Bay College and a Diploma in Education from the University of Ibaden was the source of much of the section on Nigeria.

• Mr. Le Chanh Duc, Director of INNOTECH, coordinated the interviews for Southeast Asia and contributed in part to the information on Viet Nam. He has a M.S. in Education from George Peabody College, a B.S. in social sciences from Seton Hall, a B.S. in agriculture from the University of Florida, and has done graduate work in antropology at Fordham University.

• Dr. Nguyen Quy Bong was one of the principal informants for Viet Nam. His Ed.D. is from George Peabody College.

- Mrs. Nguyen Thi Xuan, who has a B.S. in Education and completed graduate studies at Southern Illinois University, was another source of information on Viet Nam.

- Miss Le Thu Thuy also provided information on Viet Nam. She, too, has a B.S. in Education and completed graduate studies at Southern Illinois University.

- Miss Nuanchan Potar, who holds an M.Sc. in psychology and counseling from the State University of New York at Albany was one of the informants on Thailand.

- Mrs. Plookpluem Sripasert was another principal source of information on Thailand. She has a M.A. in social studies from the California Polytechnical State University at San Luis Obispo.

- Mrs. Sunan Patamachome also contributed heavily to the section on Thailand. She holds an M.A. in audiovisual education from Chulalondkorn University (Bangkok).

- Dr. Winarno Surakhmad provided most of the information on Indonesia. He was awarded a Ph.D. in educational psychology by the Institute for Teaching and Educational Sciences (Bandung) but completed his graduate course work in education at Stanford University.

- Dr. Fabiana C. Gloria, who has an M.S. in Education from Indiana University and an Ed.D. from the Filippino Woman's University (Manila) was one of the principal sources of information on the Philippines.

- Mr. Orlando B. Claveria was another source of information on the Philippines. He has an M.A. in Education from the Filippino Normal College.

- Miss Fe Clara N. Aragones, who received a B.S. in Education from the Far Eastern University (Manila) and attended graduate school at the University of the Philippines also was one of the informants for the Philippines.

- Dr. Kim Yung-Ho, who has a Ph.D. in educational research from the University of Georgia, coordinated the visit to Korea and was one of the principal sources of information on Korea.

- Mr. Park Jai-Moon was another informant on Korea. He has an M.Ed. in Educational Psychology from Seoul National University.

- Mr. Han Myun-Hee, who has an M.Ed. in elementary education from Yansei University (Korea) also provided information on Korea.

Finally, Dr. David Sprague of the Agency for International Development's Office of Education and Human Resources, Bureau for Technical Assistance, who monitored this survey, provided many very useful leads and suggestions that were extremely valuable in carrying out the project.

I. INTRODUCTION

Fundamental education consistently has been a high-priority sector in the programs of lesser developed countries. Yet, the magnitude of the deficit and the equally pressing need to invest talent and resources in other sectors have sorely limited progress toward reasonable educational opportunities for all those who would profit from it. Growth in educational capacity in most developing countries has been enormous, but concurrent increases in population in the school-age range have substantially nullified many of these advances. While there is ample reason to expect that the problem will be solved over the long term by continued improvements, the immediate needs of literally millions of potential pupils are not now being met. Given that the economic growth needed to expand educational opportunities itself hinges on more universal education, the only practical approaches to leap-frogging existing deficiencies are those based on new alternatives to traditional educational methods.

There are a number of these new approaches. Some, such as the satellite-centered television network soon to be implemented in India, emphasize applications of modern engineering technology to the delivery of quality instruction in rural areas. Others, such as Parker readers prepared for use in Venezuela, employ curriculum revisions and new materials to simplify and speed instruction. Economic, geographical, and linguistic constraints, on the other hand, make many of these innovative approaches unsuitable in a substantial number of countries which desperately need help. Other options must be identified and developed to meet educational deficits in these areas of the world.

The use of non-professional teachers represents one avenue of attack on the problem. Interestingly, the non-professional teacher has always had a significant, but rarely formalized, role in the educational process. Until the rather recent development of "public" schools, most fundamental learning took place under the auspices of untrained teachers, often parents or siblings, and sometimes religious instructors or apprentice masters. Even more remarkably, the first large-scale public schools created in England and America early in the nineteenth century achieved practical success only because they relegated much of the teaching responsibility to non-professionals through "monitorial" systems of instruction. In the most famous version of this approach to mass education, the Lancasterian system, public education was made economically feasible in cities such as New York and Philadelphia by assigning several hundred pupils to each room. A single teacher presented the lesson to designated pupils, or "monitors", who then in turn drilled small groups of ten or so students. This system, similar in many respects to traditional instructional methods used for centuries by the Hindus and Jesuits, among others, proved extremely successful at its time. It was not replaced until a steady supply of permanent teachers became available after the establishment of normal schools in the 1840's.

The use of non-professionals, then, is well founded in American educational tradition, and has tended to reappear intermittently during periods of rapidly increasing enrollments and other stresses on the educational system. In fact, a diversity of programs involving non-professional teachers currently are in vogue in the United States eventhough the supply of trained teachers recently has reached bountiful proportions. As will be explained shortly, both the imputus for these efforts and their objectives have varied considerably from program to program. Most, however, have demonstrated the considerable potential of non-professionals as components in the instructional process. Thus, while plans to utilize non-professionals as teaching resources frequently evolved to cope with a shortage of appropriately trained classroom personnel, current patterns tend to reflect the advantages of this source of instructional assistance for enhancing the fundamental quality of education. Non-professionals can provide children with learning assistance that otherwise would be beyond the reach of even the most industrious and dedicated teachers.

This state of affairs is far from typical, on the other hand, in most of the developing countries. Realistic limitations on public funds, educated manpower and classroom facilities have forced educational planners in these countries to devote the bulk of their attention to the even more critical problem of creating an opportunity for every child to attend school. In many developing countries, half or more of the eligible children must face the future without any education at all, while others must make do with only a few years of formal classroom instruction. In these areas of the world, the quality of education is an important concern but one that necessarily is secondary to the more urgent problem of making some form of instruction available to all those who are willing and able to learn. Here, too, the use of non-professionals as teaching resources could become the focus of innovative and satisfying educational programs.

This report explores the possible roles and sources of non-professionals as resources for needed educational services where an adequate supply of trained teachers does not exist. The information contained in it is based on a survey of what currently is being done in the United States to utilize non-professionals in teaching roles, the consolidation of various features of these programs into potentially appropriate core systems, and the judgments of the suitability of these core systems by experienced, research-oriented educators from eight developing countries. The goal of this survey was to explore possible teaching roles for non-professionals in lesser-developed countries through:

1. the systematic analysis of parameters which may influence the design of models of non-professional teaching;
2. the development of detailed, alternative models of non-professional teaching selected to represent modal points on the range of possible models;
3. the careful assessment of the degree to which the components of these models fit the needs and circumstances of a selected sample of developing countries;
4. the identification of both the essential characteristics of those models which show greatest promise for lesser-developed countries and situational conditions likely to affect the success or failure of efforts to make use of non-professionals in meeting educational aims; and
5. the design of a basic framework for research efforts which would further the development of cost-effective approaches using non-professionals as teaching resources in developing countries.

The section following this Introduction defines the objectives and criteria which need to be met by a practical and workable program of non-professional teaching in the developing countries. The third section surveys the most prominent approaches now in use in the United States and a few applications of non-professional teaching which already have been tried overseas. The fourth section presents several models which might be suitable as the beginning point of a developmental program for implementing non-professional teaching, and describes the prerequisites for each model in terms of the support that would be required by the non-professionals, the potential difficulties that might have to be overcome during the installation of a program, and the conditions that are likely to determine the success of that program. The fifth section describes the results of field visits to several developing countries where the suitability of alternate models was considered in detail with in-country educational researchers. A sixth section discusses the results of the survey and draws conclusions regarding the appropriateness of using students as teaching resources in the developing countries. The final section presents a research design for selecting a promising model, for implementing this model on a trial basis, and for evaluating progress during the after implementation to test the practicality and contributions of non-professional teaching in meeting the educational needs of developing countries.

II. PROGRAM GOALS

The design of an educational program which advantageously utilizes non-professionals in classroom roles must take into account the interests, needs and present resources of the system it is intended to support. Ideas of innovational "magic" in education are invariably appealing, at least in principle, but they often turn out to be ineffective in practice because they are unwieldly or unresponsive in operational settings. The use of non-professionals to expand educational services must be based on careful planning, particularly in how and where it is applied, if any of the potential benefits are to be realized. Several factors seem to be particularly important in determining the types of non-professional teaching programs which are likely to have a successful impact on the educational capabilities of developing countries. These factors were examined during the early phases of this survey to determine which approaches should be pursued in greater detail. Consequently, the scope of possibilities considered was narrowed in the following ways.

1. Educational Level

The educational deficit evident in most developing countries is so vast that almost every sector deserves attention. Only a small fraction of students ever get to attend secondary school and, in most cases, the education they receive lacks both relevance and excellence. Other, parallel, deficiences generally exist in teacher-training programs, in vocational education, in adult programs aimed at health, agriculture or literacy, and in technical fields such as medical care, small business management, or engineering. The sectors of principal concern often vary from country to country. India, for example, has an abundance of graduate engineers but a very low proportion of rural literates. South Viet Nam has a strong tradition of literacy but now is faced with an acute shortage of qualified teachers.

While the use of non-professionals is plausable for almost any of these objectives, the greatest need probably is at the level of fundamental instruction typically the focus of the first five or six years of school. Lack of opportunity to attend school, severly overcrowded classrooms, inadequately prepared teachers, scarcities of textbooks and similar problems prevent large numbers of primary-aged children in the developing countries from learning the bacis academic, vocational and life skills they must have to become productive adults. Preference for fundamental education also is appropriate for a number of other reasons. First, the primary grades provide a needed base for further education, either formal through subsequent schooling, or informal through reading and other media. Second, there are more likely to be non-professionals who themselves have the skills to be taught then would be available for more advanced subjects. And third, there is relatively little dependence at this level on sophisticated texts, equipment or facilities.

Thus, although non-professionals could be considered as potential resources at almost any educational level, the focus of this survey was directed toward primary education, a problem area of serious concern to almost every developing country, and one which might be particularly amenable to solutions based on innovative uses of non-professionals in the classroom.

2. Learning Opportunities

Almost all developing countries are unable to provide adequate educational opportunities for a substantial portion of their primary-aged children. As noted in the Introduction, providing a reasonable amount of instruction to all those who desire it characteristically is viewed as the single most pressing demand on the educational sector by officials and experts alike. The content and depth of primary education is recognized as important, of course, but national priorities in most of the developing countries tend to be focused first and foremost on the quantitative capacity of their educational systems. Approaches which emphasize some children learning more while ignoring more children learning some are not likely to receive the popular support that usually is needed to achieve, and than sustain, a meaningful impact on educational practices in the developing countries.

How the lack of educational opportunity is manifest depends to a great extent on local policies and circumstances. In Sierra Leone, for example, the constant migration of families from rural provinces to the capital area around Freetown has forced officials to limit primary school attendance largely to those children already living there at the time of entry into the first grade. Urban growth simply has proceeded too rapidly to permit existing schools to absorb ever increasing numbers of eligible children. A quite different problem is evident in many areas of East Africa where sparsely settled agricultural regions have insufficient concentrations of population to make it feasible to locate schools within reasonable walking distance for more than a handful of children. Still a different pattern occurs in countries such as Swaziland where the first four years of primary school have received governmental emphasis at the expense of subsequent years. Even many of those who successfully complete the lower primary grades are unable to continue their education because openings do not exist in upper grades.

Perhaps even more important than the opportunity to attend is the opportunity to learn. In most developing countries, the conditions of instruction may be so determental to the educational process that little learning actually takes place relative to the amounts of time, effort and money being spent. The problem is one of making efficient use of the teachers, classrooms and other expensive resources that already are being allocated to education. To some extent this has been done by means of shift schools, shared teachers and oversized classes, but these approaches typically have been accomplished through the sacrifice of learning opportunities. What is needed now are ways to make these compromises tolerable, and the possible remedy may be the addition of non-professional assistance in the classroom setting.

Thus, although improvements in all aspects of education are important, a particularly urgent goal is to expand educational opportunities so that all children can attend school, and so that all those who do attend have the opportunity to achieve a reasonable mastery of essential skills. It clearly is not advisable to sacrifice quality or content, but it is reasonable to aim at giving far more children the opportunity to receive the amount of education now available to all too few.

3. Use of Resources

Educational systems function as entities, and it is unwise to insert a new component into an ongoing structure or function without at least examining the consequences of the innovation on the remainder of the system. The use of non-professionals in the classroom will be recognized as beneficial only if the costs are tolerable considering other demands that exist on the share of national resources available for educational purposes. For example, any attempt to improve education which itself causes a diminution in the flow of professionally qualified teachers entering the schools easily could prove to be an ultimate disservice. Similarly, any approach which necessitated the parallel introduction of major curriculum reforms, of vast new building programs or of elaborate material development efforts would raise the salient question as to whether it was the introduction of non-professionals or the concomitant investments that produced the gain, or even as to whether the use of non-professionals was at all influential on the outcome.

The potential advantages of utilizing non-professionals in the educational programs of developing countries is their ready availability, their low cost and their flexibility in adapting to almost any set of circumstances. While it may be necessary to adapt or augment an existing system to allow for non-professionals, it should not be necessary to create a new system just for this purpose. Because entirely new systems almost invariably are very costly to develop, they should be designed to meet objectives that cannot be attained in any other way. Non-professionals may contribute to these systems, such as the televisions-based systems in Samoa or the Ivory Coast, but an expensive system should not be developed solely because this is the only way non-professionals successfully can be introduced into the classroom.

In order to maintain the emphasis in the project on the contribution of non-professionals to education, its focus has been on approaches which are likely to expand the capability of existing systems rather than those which require totally new systems. Consequently, approached which might require radical revisions in curriculum content, classroom space, audio-visual support, or the preparation of teachers were avoided. Similarly, approaches designed to work outside the regular school system, in the sense of organizing an educational program which competes with the system already in place, were not thoroughly considered. Such changes may well be desirable, or even necessary, if developing countries are to realize the advances in education they need for real economic growth. However, investments or departures of this magnitude are beyond the scope of a test of the practicality and appropriateness of using non-professionals to enhance education.

Thus, although radical revisions in basic educational practices may be the ultimate solution for the educational problems of the developing countries, the goal of this effort is to determine how non-professionals can be used to support existing educational programs rather than to see if they could serve is the basis for entirely new systems. The aim, then, is to determine whether non-professionals can supply relatively immediate increments in educational opportunities without accompanying investments or adjustments that are beyond the current capabilities of most developing countries.

4. Sources of Non-Professionals

The sources of non-professional teachers utilized in the United States have ranged from same-aged peers to highly qualified content specialists. Various programs at the primary school level have used volunteer housewives, paid aides, college students, girl scouts and pupil parents in addition to in-grade and upper-grade tutors. The criteria for selecting the most appropriate sources of non-professionals varies, of course, with the role they are to play and with the circumstances under which they will provide their assistance. With respect to the use of non-professionals in the developing countries, however, the most immediate concerns are their availability, their cost and the amount of supervision and support they would required.

In most developing countries, primary school teachers receive their preparation in teacher-training institutions while substitute for academic secondary schools rather than follow them as is the case here. The typical teacher can be expected to have about eight years of regular education and then two or three years of teacher training. It is not uncommon, however, to find primary school teachers who have not achieved certification because they have not completed a full teacher-training program. Many developing countries depend heavily on underqualified teachers, particularly in rural areas, because they provide services that might not be affordable otherwise and because the supply of individuals who have graduated from teacher-training institutions is exceedingly small. A further complication stems from the manpower demands of most developing countries. Most skills, including practical literacy, tend to be in short supply, and any adult with the equivalent of more than a primary education will be competed for in the job market. In fact, one of the prime causes of teacher shortages in the developing countries has been the high turnover of individuals who have used teaching as a stepping-stone to other careers.

With the exception of a few countries, there are simply too few educated adults for this group to represent a realistic source of non-professionals. And, even where they are available, it would be self-defeating to attempt to lure them into the schools with wages that otherwise could be used to enlarge the numbers of career teachers. Volunteer adults, including the parents of pupils, are no more likely a source of instructional assistance than the use of para-professionals. Typically, the literacy rate in developing countries for those over 25 is only half of what it is for those under 15. The instructional functions that could be performed by individuals who themselves do not have the skills to be taught would be sorely limited. A related option would be to offer available adults a primary level education in turn for their future assistance in the classroom. This approach may have some merit in certain parts of the world, but in many countries the vast majority of people exist on a subsistence economy where all able adults have to participate in gathering or preparing food, obtaining fuel, and maintaining dwellings. Only the very old and the very young are afforded the luxury of spare time.

Still another conceivable source includes secondary, technical and university students, all of whom are likely to have mastered the content to be taught and probably could follow the necessary procedures with minimal specialized training. While this group generally is not employed, they do represent potential national assets that also deserve immediate priority. Any activity which is likely to delay their availability in their own career fields could have a serious impact on overall economic development. Teacher-training candidates, on the other hand, could play a role in a non-professional teaching program because, in this instance, the training and experience they would receive might significantly enhance their future instructional capabilities.

In contrast to either adults or advanced students, children almost always are readily available, require no salary and generally are agreeable to taking directions from a teacher. As will be seen, experience in the United States suggest that children helping other children often produces mixed results. Nevertheless, children already enrolled in school form a very desirable pool of non-professional assistance because at least many of them already will have learned the needed content and yet they are still too young for really productive employment in other capacities. This group encompasses a fairly broad range of possibilities, including primary school graduates who are not interested in, or eligible for, secondary, technical or teacher-training education, school leavers, and pupils still in school who could help teach their peers or students in lower classes.

Thus, although the use of adults in non-professional teaching roles can be viewed as an approach having considerable merit in this country, the most promising source of non-professionals in the developing countries is likely to be other students. This source was given primary attention during the survey and was influential in selecting which projects would be reviewed, in deciding what models would be developed for possible application overseas, and in shaping the discussions of these models in the developing countries.

5. Roles for Non-Professionals

A number of conflicting strategies have been proposed to describe the kinds of instructional assistance most likely to enhance learning. One position focuses on the clarity and cogency of the presentation, another on the frequency and sequence of student responding. Most educators attempt to take a stance somewhere between these two extremes and provide, as fully as possible, the learning experiences suggested by each. Thus, the typical teacher tends to divide the available instructional time, with a portion allocated to lectures or demonstrations and a portion devoted to exercises and practice. Non-professionals could be called upon to take either of these two roles. In addition, they could be used to serve other roles, such as tutoring, not presently performed by teachers in most educational settings. Each of these possible roles deserves careful consideration.

First, the non-professional could be assigned the role of presenting new content. Although the teacher normally is better qualified to accomplish this task, several exceptions can be identified. To begin with, a teacher does not necessarily have the time to present all the appropriate content to all groups which may be present in the classroom. For example, schools utilizing shared teachers, as is done in "one-room schoolhouses", must spread the teacher's time among as many as six to eight grades. Using non-professionals for some part of this responsibility would increase the amount and variety of content that could be presented during the school day. Another exception is when one of the students actually is more knowledgeable about the subject to be taught then the teacher. While this is less likely to be the case for purely academic subjects, it easily could be true for various crafts, vocational, or other specialized topics. Lessons on English pronunciation, for instance, where English has to be learned as a second language, might be more effectively assigned to an outstanding student than to the regular teacher. Still another exception rests in the kinds of presentations a student is likely to make. Peers may be more likely to devise and present explanations which are simpler and more appropriate to the needs of other students than a teacher who long ago had mastered the principle and has since forgotten which aspects are likely to cause difficulties.

Second, a non-professional teacher could supply active, tutorial assistance to individuals or small groups of students, especially those who were encountering difficulty with their school work. This is a role that most classroom teachers simply do not have time to fulfill considering the usually tight schedule followed in most schools, and the number of children likely to be in the classroom. Tutorial instruction is quite different from normal classroom teaching because it is individually rather than group oriented. Segments of lessons can be repeated as few or as many times as necessary for that individual learner to master what is being taught. Explanations can be varied and adapted to suit the background and experience of the learner. Difficulties can be identified promptly and remedied immediately. Rewards can be given and errors pointed out instantly, so that progress can be made as rapidly as possible. While peer-aged non-professionals may not have the skill and knowledge that a good teacher might bring to bear in tutorial instruction, they nontheless are more likely to have the patience, perseverance, enthusiasm and insight that well could be needed by a learner who is having difficulty.

Third, a non-professional can serve a monitorial function to help maintain discipline and attention in a crowded or shared-teacher classroom. Children in any part of the world are distracted easily, particularly when not under the immediate supervision of a teacher. The presence of an older or more advanced child may be all that is necessary to keep a group of children at an assigned task, such as the completion of a set of problems or exercises, and control them from being a disturbing influence on other children who are trying to complete their work or listen to the teacher in another part of the room. Monitors, as will be seen, also can be used efficiently to present problems, conduct drills, read stories aloud, operate classroom aids, and perform similar functions that do not require spontaneous explanations or the qualitative evaluation of student responses. Although the responsibilty for insuring discipline and for assigning drills typically will rest with the teacher, these duties could be carried out without significantly detracting from available instructional time by the use of student assistants.

Fourth, a non-professional can serve as a practice agent to improve the value and facilitate the administration of classroom learning activities. Almost everyone has experienced the technique of "trading papers" after an exercise to permit the answers to be checked quickly by a classmate as the teacher read them out. Teachers also assign children to pairs or small groups for spelling practice, science projects and arithmetic activities, like "playing store". Students working together can share ideas, learn cooperation, and profit from observing each other's performance. They can help one another by presenting problems, correcting answers, reading out instructions or making suggestions. A number of efforts in the United States concerned with peer-tutoring have, in fact, focused more on the social benefits of learning to help one another than on the academic gains that might result. Several programs also have been developed which use parents or other adults as practice agents to help present homework assignments that the child cannot do by himself, such as reciting the directions that accompany take-home portions of beginning reading lessons.

Thus, although non-professionals might be used to duplicate a number of teacher roles, there also are several roles that are not normally taken by the teacher but could be furnished by a non-professional. Because new methods for supporting teachers, but not for replacing them, is one of the main objectives of this survey, particular attention was given to those roles that might be taken by non-professionals which yield forms of instructional assistance not normally or not necessarily those that are clearly the responsibility of the classroom teacher.

6. Support Required

As will be reported shortly, the use of students or other non-professionals as teaching resources usually has entailed considerable support in the form of supervision, training, and specialized teaching aids. In part, the degree to which these components are necessary to the success of a program depends on the teaching role assigned to the non-professional and the instructional objectives he is to accomplish. There is no doubt that almost any non-professional could produce useful results given enough supervision, training and specialized aids. The question, however, is whether this support is within the capability of most developing countries and whether it is a necessary precondition for utilizing non-professionals in an instructional setting.

The supervision of non-professionals typically accents scheduling, motivating and controlling their activities. In several projects being conducted here in the United States, supervision is felt to require a full-time professional even to manage a few dozen non-professionals. Scheduling requires considerable record-keeping and coordination to insure the right older students are available at the proper time to help the younger children. Motivation, in many cases, has depended on cash payments or opportunities to earn prizes for those providing the assistance. Monitoring the work of non-professionals also entails substantial effort, documentation and frequent observations. These requisites to the success of a teaching system which uses non-professionals may be warrented for initial experimentation, or when the contributions to be made by the non-professionals clearly are worthy of the costs of supervision. In most developing countries, however, the cost of education already has reached its practical limit and the problem is not whether the benefits are equal to the additional expense but whether any additional expense can be justified which does not go directly to teachers, facilities of essential classroom materials.

The training of participating non-professionals similarly may use resources that more expeditiously could be used to upgrade regular instruction by strengthening both in-service or pre-service teacher-training. A training program of a few days or more which has to be repeated each year for a new group of non-professionals might, in most of the developing countries, be more constructively utilized to enhance the skills of underqualified career teachers. Finally, the value of developing extensive arrays of classroom materials, if these are needed to permit the non-professionals to be effective, can be questioned. As noted earlier, the use of students as teaching resources is only one potential remedy for the shortage of education overseas. More effective instructional materials and aids is another. Developing new materials simply to make the use of non-professionals feasible, however, may be an overly elaborate solution to the problem of improving education in the developing countries.

Thus, although extensive requirements for supervision, training, specialized materials and other support have been part of most efforts to use non-professionals as teaching resources, this survey has focused on arrangements which would be feasible within existing systems, and which would entail only token additional costs. This is not to say that some support for the non-professional would be inappropriate, or that none would be required. It does emphasize, however, that the use of non-professionals as teaching resources would most likely be adopted both when the benefits were substantial and the cost in resources did not detract from other approaches for enhancing education.

7. Diversity of Requirements

Regardless of how desirable it would be to try to conceptualize the educational conditions or needs which might be "typical" of most developing countries, no two nations need to overcome identical difficulties or have the same resources at their disposal. Even within countries, language groupings, differential urbanization, population shifts and other factors are likely to result in differences in educational practices and opportunities for change from one region to the next. In this country, for example, an innovation which might be regarded as beneficial for an Indian reservation school in the Southwest might not be effective, or even appropriate, applied to a one-room schoolhouse in Nebraska or a modern suburban school in New England. While most developing countries share many of the same problems, and most have reasonably similar needs, their differences can be just as outstanding.

Under these circumstances, the notion that a single model of non-professional teaching assistance would be equally useful or appropriate in all developing countries, or even those in a particular region of the world, is not very productive. It is far more likely that several models may have to be considered and, even then, the most promising ones will have to be carefully tailored to meet the expectations and requirements of each installation. Nevertheless, the various constraints already described were used to narrow the range and number of models considered in all phases of the survey. The scope of this project simply did not allow unlimited data gathering or the detailed investigation of all possible alternatives. It should be recognized, therefore, that still other models could be devised to meet certain needs in individual countries, and that conscientious investigators should fully exhaust all possibilities which are consistent with available resources and which hold promise of making significant contribution to educational outcomes.

Thus, although this survey limited the range of models to be considered in terms of the educational level addressed, the focus on learning opportunities, the need for additional resources, the sources of non-professionals to be utilized, the roles for these non-professionals, and the support they would require, it has not assumed any one solution would *suffice to match the needs or capabilities of all developing countries*. Instead, it has been presumed that each country would require a model that was more or less tailored to its own requirements. Although many commonalties probably would be apparent in these eventual models, and although the experience gained in one country would be highly beneficial to the design of programs in other countries, it would be unwise to presume that any one system of using students as teaching resources would be applicable universally.

III. AN OVERVIEW OF PAST AND PRESENT USES OF STUDENTS AS TEACHING RESOURCES

A. Historical Background

Credit generally is given to Joseph Lancaster (1778-1838) for the first use of students as teaching resources in a formal, systematic way. As will be seen in a moment, the fundamental idea of using children to teach children certainly did not originate with Lancaster, but it indeed was through his efforts that the concept achieved a noteworthy popularity, first in England and then in the United States during the first half of the nineteenth century. Since his approach no longer is in use anywhere, most probably because the conditions he encountered no longer represent the major causes of educational deprivation, Lancaster's contributions may be more appropriately recognized as an historical coincidence than as a significant antecedent of current interest in teaching by students. On the other hand, he was the first to design an instructional system which made education for the urban masses plausible and affordable. Without his timely innovations, and his recognition that students were potential and under used resources, the idea of education for everyone might not yet have become a commonplace expectation.

A more credible source of the fundamental position that students are able to assume instructional functions is that it derives from the master-student pattern of education which once was characteristic of all instruction in the histories of economically advanced nations and is still to be seen in many lesser developed parts of the world. Even in the elitist days following the Middle Ages, a professional artesian attributed the acquisition of his skill to the overall guidance of a recognized expert, eventhough he often really learned at the hands of a more advanced student apprenticed to the same master. Until Lancaster, as a matter of necessity, instruction was limited to those few individuals a master could work with personally or, if he were famous enough, to those he could assign to an advanced subordinate. Education in those days, whether it focused on medicine, religion, sculpture or tinkering, was highly individualized and tutorial. The idea of large classes in which students received grouped instruction presented by a trained teacher was, in fact, a consequence of Lancaster's efforts. These showed, more importantly then anything else, that education need not depend on the immediate presence of a recognized master but, instead, that any properly

BEST COPY AVAILABLE

motivated, appropriately trained and firmly guided person could lead others to learn. Most recent efforts to explore the use of students as teaching resources have focused not, as did Lancaster, on expanding the availability of education, but on ways to bring back the older, individualized, tutorial relationships that have tended to disappear with the advent of mass education.

One other historical antecedent to the use of students as teaching resources in the United States deserves significant attention. Students assuming teaching roles was commonplace in the one-room schoolhouse that characterized much of American education as recently as a generation ago.* One popular teacher-training text of the period (Woofter, 1917) describes this approach to using pupils in instructional roles in one-room schools:

> Nearly always there will be some older pupils who can be quickly shown how to assist with the younger ones. These older pupils should be appointed for this work. It will be very helpful for them, and will permit the teacher to give more time to other things. After a teacher has taught a reading or number lesson to first or second grade, some older pupil, who has been called to watch the lesson, can carry on the drill by showing cards for sight work, and by pointing to figures to be combined for number practice. Older pupils can conduct spelling lessons and correct written spelling. This will make the older ones more thorough, and it will help to organize the school into a wholesome working community. Different ones may be assigned these duties in turn, thus not making it a burden. (pp. 52-54)

The two comments in the next-to-last sentence, that teaching will benefit those students who do it and that the process will weld students together, turn out to be highly prophetic of the latest surge of interest in students as teaching resources beginning in the 1960's.

Before turning to these more recent developments, however, the tightly organized system proposed by Lancaster should be more fully described. His initial intent was not to revolutionize education but, instead, to charitably offer the rudiments of classical instruction to a handful of needy London children. The crowds of children who appeared at his door overwhelmed him, however, and lacking assistants, he set himself to working out the details of a procedure which would allow his pupils to teach each other. Within less than ten years, his writings and lectures attracted sufficient attention to yield the funds he needed to open further schools, but his judgment failed to keep pace with his enthusiasm and, after a series of bankruptcies, he emigrated to the United States at age 30. While Lancasterian schools already had gained a foothold here before their originator arrived, he was unable to obtain the funds he felt were necessary to expand the then existing programs in the directions he suggested. So, seven years later, he moved again, this time to Venezuela. This likely first effort to encourage the use of students as teaching resources in a non-industrial country also failed to achieve sufficient support, and Lancaster returned to the United States where he continued refining his system until his accidental death in 1838.

---

* In September, 1950, there still were over 61,000 one-teacher schools in the United States although this was less than one-third the number operating in the 1917-1918 school year; in 1950, incidentally, no state has less than 25 one-teacher schools and ten had 3,000 or more of them (Chase and Baker, 1952).

The Lancasterian method was as much as mass-produced education as it was education produced for the masses. Almost all of the attributes that Henry Ford would later bring to auto production were there, including standardization, labor-saving devices and almost continuous quality control. Saettler (1968) describes the process in these terms:

> Under an efficient scheme of classroom management, one teacher taught a group of fifty head pupils, or monitors, who in turn each drilled ten pupils. Thus, one teacher was able to take charge of five hundred or more students at one time. In the teaching of arithmetic, for example, Lancaster had the following plan: the basis of progress was founded on a thorough knowledge of the multiplication tables. As each new rule was introduced, the examples were first short and easy, then increased in length and difficulty as the ability of the learner increased. Each class had a definite number of sample problems to be worked over and over until they could be solved with facility. When teaching a new rule, the monitor first dictated an example, then worked it out while the pupils copied the process on their slates. Afterward, the slates were cleaned and examples were written on the blackboard, each pupil, in turn, taking part in the operation. This process was repeated until the method of problem solving was understood. (p. 28)

Every event and activity was accomplished with what the Encyclopedia Britannica calls, "military precision, according to directions laid down in minute detail by Lancaster and from which his followers were not to deviate by a hair's breath". Routines were devised for identifying absentees, for moving about the schoolroom, and even for removing hats in the morning.

Not only were monitors selected and assigned to teach, but others also were chosen to take attendance, examine pupil attainment, and take charge of materials. There even was a monitor designated to monitor the other monitors. The teacher, in most versions of the system, had little to do since Lancaster's planning had anticipated almost every schoolroom event. This itself may have been the downfall of the Lancasterian approach. As Saettler (1968) points out, those capable of becoming monitors quickly left school to take paying positions. Untrained women hired to replace them at token salaries proved not up to the task, so programs of training women in the art of teaching had to be established, which created the first normal schools. This, it can be presumed, led to "professionalism" in pedagogy and ultimately to the prerogative of being able to abandon the very explicit routines inherent in Lancaster's and similar systems.

The rigidity of Lancaster's methods should not mask the innovative aspects of his solutions to problems. In the very best usage of what now is called the "systems approach", every aspect of the teaching routine was explored. For example, first-year students learned to write letters on specially designed sand tables to save paper. Text content was sometimes copied on charts which were attached to the walls to spare students the cost of individual books. Slates were to be hung at the sides of desks to eliminate the time and confusion needed to get them from a central place. Monitors were given printed cards to be used in disciplining the pupils without the disruption of an oral reprimand. He even pointed out the value of rounding the corners of pupil desks to reduce injuries, and suggested the use of a system of rewards in the form of tickets which later could be turned in for prizes.*

Lancaster, through his carefully planned and instrumented system, produced the basis for low-cost instruction that has enabled the development of standards of universal education now taken for granted in most countries. His system allowed one teacher to oversee literally hundreds of students, and teach them to read and write and count in a continuous progression plan based on demonstrated competence. Although many features of his approach would be regarded as intolerable today, he did accomplish the impossible by providing the rudiments of education to children who otherwise had access to neither teachers nor textbooks. (Because of his very substantial contributions to the notion that students could be used as teaching resources, the abridged version of his Improvements in Education which was printed in London in 1808 has been reproduced in its entirety as an Appendix to this report.*)

---

* The design of this token reward program anticipates by well over one hundred years the very similar programs introduced in the last decade by behaviorally-oriented practitioners. Lancaster's (1808) description of his use of tickets distributed by the monitors contains a surprising number of parallels to the work now being carried out by Bright and his associates at the Western Institute of Science and Technology (for example, see Bright and Colosimo, 1971).

Similarly, the adaptability and ingenuity of rural teachers responsible for instructing multiple grades within a single classroom helped set the stage for later programs in the United States based on using students in teaching roles. The comprehensive, multi-room schools that characterize an overwhelming proportion of American education today are recognized as deficient in a number of respects by those who have come to regard their own experience in a one-room schoolhouse as a model of educational excellence. The individuality, informality and cooperative spirit that characterized the one-room school are easy contrasts to the stodginess of most urban schools, and particularly those in metropolitan ghettos. That at least some people consider rural schools with all their defects superior to city schools, and recall with pleasure the interdependent learning relationships that one-room schools necessarily fostered, lends support to the idea that pupils can and will work together to the advantage of all. The residue of this feeling undoubtedly has had a significant impact on the ready acceptance of students in instructional roles here in the United States.

---

* Courtesy of the University of Pittsburgh Libraries, Special Collections.

B. Recent Interest in the Tutorial Process

In the early 1960's, concern over the quality of education being received by urban ghetto children reached the point of being the focus of some rather massive programs, including a number encouraged and sponsored by the Federal government. These programs, of course, took a variety of directions. One, for example, was the provision made for the purchase of audiovisual equipment by local schools using Federal funds, and another was the allocation of grants-in-aid to encourage students to pursue careers in science teaching, to work with handicapped children, to carry out educational research and to participate in other selected areas where professional manpower was in short supply. Still another direction taken by those working toward improvements in inner-city schools was based on the use of nonprofessionals as adjuncts to regular classroom teachers.

An early highlight of these efforts was the creation of a role for nonprofessional aides to assist teachers in the classroom. One of the first experiments in this field was carried out in Bay City, Michigan in 1953 under Ford Foundation support. This and two subsequent studies sponsored by the Ford Foundation, one in Connecticut and one in New Jersey, were designed to test the use of auxiliary personnel as a means of relieving trained teachers of their clerical and similar responsibilities, and thereby freeing them to devote a greater share of their attention to instructing students. According to Bowman and Klopf (1968), however, these attempts failed to reach their goal because of teacher resistance brought about by the apparent allocation of scarce educational funds to the hiring of untrained assistants rather than to the addition of more professional teachers to the local school systems.

The idea of using low-cost auxiliaries, which first appeared during the depression of the 1930's as a Works Projects Administration and National Youth Administration effort to employ relatively unskilled, low-income workers in the health and related public service fields, was not fully abandoned, however, and experimentation with classroom aides was renewed in the 1960's. This time, however, a far more concentrated effort was made to foster team relationships between the teacher and the nonprofessional, particularly when the value of an indigenous auxiliary working in a school serving a disadvantaged neighborhood was recognized. Training of the non-professionals became a key component, as did the systematic design of their responsibilities, the creation of opportunities for career growth, the establishment of specialized supervisory positions and the addition of tutorial and other teaching duties to their daily work. The careful study of five comprehensive programs which used these principles and which were carried out in variety of locations suggested that hired teacher aides could be utilized successfully and productively in the classroom providing adequate efforts were made to plan their functions and roles beforehand (Bowman and Klopf, 1968).

Not all efforts to deal with the problems of inner-city education relied on paid, career employees working inside the schools. In 1962, for instance, the city of Chicago initiated a program to use housewives, college students and older volunteering adults as tutors in neighborhood, after-school "study centers". Within three years, according to Janowitz (1965), the number of such centers in Chicago alone had grown to 150, and similar tutoring projects had developed in most major American cities. The principal focus of these volunteer-staffed centers was on compensatory education, helping those children who had been unable to succeed in school obtain a meaningful and useful education. As had been the case with studies on the use of paid assistants, research on the contributions made by volunteer adults seems to depend more on the enthusiasm it generates than on empirical findings as a criterion of program effectiveness. The only quantitative results cited by Janowitz, for example, related to a pilot investigation which revealed that 17 students referred to a center because they were retarded in reading scored only 0.4 years behind their age norm after six months or more of having been tutored for 45 minutes once each week, while 21 students enrolled in the same program but having experienced less than two months of tutoring scored 1.8 years behind (Janowitz, 1965, p. 94).

Riessman (1972) cites a number of otherwise unpublished studies concerning the contributions of both paid and volunteer para-professionals. One of these was a survey by the American Institutes for Research of all U. S. Office of Education compensatory educational programs for the disadvantaged carried out between 1963 and 1968. Of the 1000 or so projects examined, only 23 were found to have produced measurable attainment benefits and, of these 23, 11 utilized para-professionals. Another was a study of teacher aides in Minneapolis which showed that kindergarten children gained 50 percent more in classes with an aide compared to classes where an aide was not present. Still other studies reported by Riessman on the benefits attributable to aides suggest that they improve the achievement of second graders, that they are more effective remedial reading instructors than either regular or certified remedial reading teachers, and that they can produce decisive improvements in reading skills by offering daily 15 minute periods of tutoring. No findings are given to support these last several conclusions, however.

A third branch of these efforts to improve education in the urban ghettos was first undertaken by Mobilization for Youth, Inc., New York City antipoverty agency, in 1963. According to Gartner, Kohler and Riessman (1971), this program began with the establishment of nine specially designed centers in New York neighborhood elementary schools. Unlike the programs already described, these centers employed high-school students, themselves from the ghettos, as tutors for disadvantaged fourth and fifth graders. In the initial project, the younger students were tutored either two or four hours per week from November to June of the 1963-1964 school year. An evaluation of this first year of operation in the "Homework Helper" program centers was undertaken by Cloward (1967). He reported that the 356 tutees available for post-testing had gained an average of 6 months on the New York Tests of Growth in Reading if they were tutored four hours weekly for the five months between test administrations, and had gained an average of 5 months on the test if they were tutored two hours weekly. Scores from 157 control subjects randomly selected for non-inclusion in the experiment showed a gain of only 3.5 months during the five month period. Both the tutees and their control counterparts averaged little more than 11 months below grade level at the start of the study.

Cloward's results concerning gains made by the tutors were far more surprising. The 97 tutors, who were tenth and eleventh graders, showed an average gain on the Iowa Silent Reading Test of 3.4 years during the seven months between their pretest and posttest. The equivalent finding for 57 controls who were randomly selected for non-inclusion in the study was only 1.7 years. Although, as Cloward explains, some of the gains may be attributable "to increased familiarity with the complex directions for taking the test (1967, p. 22)", both the experimentals and the controls had equal experience with the test, and yet those who did the tutoring achieved twice the gains of those who did not. The publication of an article which included these data by the New York Times on 29 October 1967 understandably created a great deal of attention for the program, and launched a burst of interest in the possible benefits that can accrue when children teach children.

By 1969, Thelen (1969) was able to point not only to the Mobilization for Youth's "Homework Helper" program, but also to a spate of other programs in which students taught other students. One of these, at Hunter College, used teacher trainees to tutor fifth and sixth graders who, in turn, tutored third graders on the lesson they just had. The fifth and sixth graders learned for four hours and taught for two hours each week. In another study, at University City, Missouri, junior high school students spent five hours a week tutoring elementary school children. The effects on the tutors were gratifying. These children devoted considerable energy and effort toward devising instructional materials suitable for their young charges, toward polishing their own skills before trying to teach them, and toward working together to help each other improve their tutoring techniques. Salem, Oregon paid disadvantaged high school and junior high school students $1.25 per hour to help disadvantaged children. Still other programs were noted in various sections of the country, where older students, mostly volunteers, provided assistance to younger pupils. One exception to this general pattern was Thelen's report of a program in Bethpage, Long Island where students in one elementary school deliberately were grouped into classes with a two to three year age spread among children. By increasing the heterogeneity of the classes, older children always would be available to help younger ones, remedial instruction would be facilitated, and there would be constant opportunities to overhear and profit from the lessons being presented to the other age groups. This, Thelen pointed out, resembles the environment of "the little old red schoolhouse".*

---

* Gartner, Kohler and Riessman (1971) report a similar program underway in LaGrange, Illinois since 1967.

In his discussion, Thelen stresses the variety of programs that he was able to locate and the emphasis, in most of them, on the "helping relationship" itself as a valuable educational experience. This theme of the "helping relationship" has been the focus of work by Peggy and Ronald Lippitt at the University of Michigan since 1962. Their approach, called the "Cross-Age Helping Program", is based on several principles (Lippitt, Lippitt and Eiseman, 1971). First, the older child is an important potential source of influence for the younger child. Second, the best way for an older child to learn is by helping somebody else learn. Third, any further individualization of education necessarily will include a high proportion of volunteers, particularly older students, who are a most available resource and can benefit from helping younger children. And fourth, the older children's experience tends to positively change their attitudes toward education, towards teachers and towards themselves.

In operation, there are two aspects to the program (Lippitt and Lippitt, 1968): the tutoring of younger children by older children, and the training of the older children on how to make their efforts as helpful as possible. The tutoring periods last from 20 to 50 minutes, depending on the age and interests of the younger children, and are held three or four days per week. The teachers of the tutor and tutee schedule the sessions so they will not interfere with either's regular classwork. Any convenient place is used, such as at the younger child's desk, the rear of the room or a hallway. The content of the sessions can represent the full range of subjects covered during the school year, and have included reading, writing, spelling, mathematics, physical education and shop. Mostly, the younger children receive help individually, although small groups of tutees sometimes are formed. The tutors typically are fifth and sixth graders, but the program also has been successful using fourth graders and junior and senior high school students. Generally (Lippitt, 1969), the tutees are first and second graders. Although children in the same grade can help each other, the best results usually are obtained when the age difference is three or more years. Tutoring relationships can be directed at enrichment for brighter students, but the benefits to both children are particularly evident when older pupils performing below their grade level help younger children who also are behind.

The training of the older children is particularly important according to the Lippitts (1968, 1971). In addition to their periodic conferences with the younger child's teacher, regular weekly seminars are held for the tutors, very often as part of their regular school program. During these seminars, they learn to diagnose learning difficulties, to recognize the importance of learning, to improve the relationships between older and younger children, to understand the younger child's self-image and attitudes, to interview younger children, to interpret interview findings, to consider alternate ways of handling learning situations, to make younger children feel liked and important, to cooperate with teachers, and to use the seminar group as a resource for problem solving. Voluntary participation in the program is stressed and experience with the Cross-Age Helping Program has shown that if enough support is given, the tutors will be amply motivated.

A sizable number of school districts throughout the country have adopted the Lippitts' program. Perhaps because of the program's emphasis on difficult-to-measure social benefits, there have been only a few empirically oriented evaluations of its effectiveness, however. The most extensive evaluation, conducted in California's Ontario-Montclair School District in 1970, involved 60 fourth, fifth and sixth grade elementary students as the tutees and 60 eighth grade junior high school students as their tutors. Over the seven month assessment period, the tutors gained an added three months of growth in reading and mathematics, and two months in language, over non-participating controls. The younger children's gains exceeded those of their controls by two months in reading and one month in language. Both groups exceeded their control counterparts on improvements in self-concept as measured by standardized scales. Similarly, both the tutors and the tutees showed more substantial gains on sociometric ratings of leadership and learning than the controls, and both groups outdistanced the controls in improvements in discipline. Finally, the younger participating children significantly reduced their absences although equivalent results were not obtained for the older children who were part of the study (Lippitt, Lippitt and Eiseman, 1971).

In 1967, another major program, called "Youth Tutoring Youth", was initiated in Newark and Philadelphia under the direction of Mary Conway Kohler. This program was sponsored by the United States Department of

Labor and was carried out by the National Commission on Resources for Youth, Inc., a private organization located in New York City. In many respects, the design of the program was similar to that of the Homework Helper program already described. However, based on the results of that earlier effort, emphasis was directed toward the tutors, who were chosen because they were significantly behind grade level in reading ability. The tutors were selected from among Neighborhood Youth Corps enrollees, and therefore were disadvantaged ghetto teen-agers who were thought likely to leave school. The Neighborhood Youth Corps program was established by the United States Department of Labor to provide these youngsters with paying jobs after school and during summer vacations so as to dissuade them from dropping out of school before graduation. Although Federal funds were made available for their salaries, identifying useful social and community service tasks that could be performed by the enrollees proved difficult. Many were given employment at "make-work" occupations, which were parallel in some instances to the jobs created for the unemployed during the depression of the 1930's by the Works Projects Administration, but more often their assignments were to menial tasks such as janitorial and clerical assistants in local school systems. Finding useful and respectful occupations for these unskilled youths was itself a major challenge.

The design for the Youth Tutoring Youth program thus met an urgent need for the constructive employment of low-income teen-agers and, at the same time, afforded both an opportunity to help younger ghetto children gain more from school and an expectation that those who gave help would themselves improve in school-related skills. In the Newark and Philadelphia programs, the tutors were paid $27.50 per week during the Summer of 1967 for six hours of training and 22 hours of tutoring younger children. Generally, each tutor was responsible for two tutees, helping each of them two hours per day, four days per week (Gartner, Kohler and Riessman, 1971). During the six weeks of this pilot program, the fourteen and fifteen year old tutors who, it should be remembered, were the prime concern in this study, gained considerably in reading skills. The Philadelphia tutors, who averaged 0.4 grades behind in reading at the beginning, increased a full grade level in the six weeks. The Newark tutors, who had averaged 2.9 grades below their age level, advanced a full 3.7 years in the course of the study. In addition, various attitude changes were observed, such as the pride the tutors evidenced, their creativity in preparing instructional materials for their charges, and their new found interest in independent reading. So impressive were these results that similar Youth Tutoring Youth programs quickly were begun in Detroit, Washington and Los Angeles following both after school and summer schedules. By the fall of 1970, more than 200 school districts throughout the country were known to be using the program (Gartner, Kohler and Riessman, 1971). In addition, the concept was incorporated into the United States Office of Education's Career Opportunities Program which was operating in 131 communities in all 50 states.

A key philosophy of the Youth Tutoring Youth program has been its willingness to rely on the "inner resources" of the underachieving, disadvantaged youths hired to serve as tutors. By yielding to them the full responsibility for the tutoring of younger children, they are expected to grow in confidence, self-image and individual development. The tutor is given the freedom to select the content of the tutorial sessions and devise the learning experiences and materials he will present to the tutee. As a consequence, he tends to devote an amazing amount of effort to developing exercises that will be both pleasureful for younger children and improve their skills. Innovation and a personalized approach to the tutoring task are encouraged. As in the Lippitts' program, training is considered an essential requisite to success. In this case, however, emphasis is given to the training of the teachers, community representatives and school administrators who will direct the program in their own school districts. These individuals are brought to an existing Youth Tutoring Youth center for from two to six days to work with the staff and tutors of the ongoing project, and learn from them how the program should operate. Special attention is given to letting these prospective supervisors see for themselves the seriousness and industriousness shown by the tutors as they go about their activities.

Because this program was spreading greatly in popularity, a second evaluation of its effectiveness was begun in 1969 under the direction of an advisory panel headed by Ralph Tyler. After a pretest of the assessment instruments in the Summer of 1970, Washington and Chicago were selected as the sites of a thorough evaluation project. The examination of participating tutors and tutees, and non-participating controls, was carried out in the

Fall of 1970 and the Spring of 1971. The report of this study (Strodtbeck and Granick, 1972) concluded that there "was a significant improvement in language skills (writing ability)" of the 277 tutors over the 207 non-tutors, and a similar gain in school attendance.* The results of tests designed to measure growth in self-esteem, self-efficacy and maturity levels among the tutors were less clear, and gains in these affective areas were evident only for those tutors who also showed gains in language skills and attendance.

For the tutees, the report indicates somewhat greater gains in reading interest for the participants over the controls, although not in reading skills; in fact, the Metropolitan Achievement Test actually showed a slight decline in reading level for the 219 participating tutees over the 185 non-participating controls. Slight gains in self-confidence and classroom behavior were reported.** The period covered by the evaluation was approximately twenty weeks, all of the participants were inner-city disadvantaged youngsters performing substantially below grade level at the beginning of the study, and the tutoring sessions were carried out over several hours each week. Although the overall findings were slightly positive, it is likely that more substantial gains, particularly for the tutors, had been expected on the basis of the earlier, 1969 study.

Other efforts to use students as teaching resources in recent years have yielded similarly inconsistent outcomes. In a recent and as yet unpublished paper, Robert Cloward of Rhode Island College identifies several studies which either failed to obtain gains for participants in tutorial programs, failed to characterize or supply data, failed to use control groups in establishing comparisons, or failed to analyze the results correctly. A rather arbitrary sampling of some of the available literature on students in instructional roles yields somewhat the same picture. For example, Lutz and Stuart (1968) describe the use of sixth-grade children as aides in kindergarten, Mays (1968) reports on teen-aged aides in nursery programs, and Tosti (1973) discusses the use of in-group peers, at both the elementary school and college levels, as proctors to test their classmates in individualized learning programs, but none of these authors report any evaluative findings. The same is true of a paper by Swett (1971) on fourth graders "adopting" kindergarten children, one by Allen (1967) on elementary school children helping each other during science experiments, reading exercises and vocabulary drills, and one by Gracey and Houghton (1971) on home economics students working with kindergarteners. A non-empirical orientation toward innovation in education is not limited to this country. A rather comprehensive report (Hannam, Smyth and Stephenson, 1971) on the "Hillview Project", in which British students in education were assigned two or three "reluctant" learners to assist over a period of a year by meeting with them and forming constructive relationships, provides no quantitative data on the success of this program. This also is the case in a description (Moore, 1968) of the English tutorial method of education with its emphasis on the value of a critical listener to help organize what one has learned.

---

* It should be noted, however, that the language-oriented gains reported should be interpreted cautiously. The instrument itself consisted only of twelve sentence "stubs" (e.g., "I feel sorry ....") which were to be completed by the tutor and then scored for both grammatical and spelling errors. Furthermore, the use of gain scores in the statistical analysis was quite questionable considering the ceiling on possible gains and the lack of any rationale for assuming the need to correct for covariance. No additional standardized tests of academic growth were administered.

** The implication of these findings also should be considered with caution; in many instances, the gains reported for the tutees were limited to only one of several measures, or to only one of several subgroups (e.g., Chicago-Males).

On the other hand, exceptions to the general tendency to omit assessment do exist. One was a study by Snapp, Oakland and Williams (1972) which investigated the use of fifth and sixth graders to tutor disadvantaged first second and third graders in reading. Although limited to the more specific instructional objectives, significant gains were reported for the tutees following eight weeks of tutorial assistance given in sessions of twenty minutes on four days each week before regular school hours. No gains were found for the tutors, who were unpaid and felt not to be unmotivated, despite the interest shown by the tutees. A report by Bailey, et. al. (1971) on the success obtained by peers helping fellow pre-delinquents improve their speech is another exception. In this experiment, it was determined that a tutor, without any training, could measurably improve a tutee's clarity of articulation.

Not all programs using students as teaching resources assign them tutorial or monitorial functions. Leon Henkin and his associates, Louis Schell and Harriet Amster, at the University of California at Berkeley have been developing a program over the last two years in which ninth grade students actually teach portions of a mathematics course to seventh graders. This effort, which was begun with funds from the National Science Foundation, is now being supported by the National Institute of Education so that a thorough evaluation can be conducted. The aim of the project is to improve the interest and achievement of disadvantaged seventh grade students in mathematics by having them receive some of their instruction from specially trained, ninth grade students who also are disadvantaged. By having mathematics taught by an interested and knowledgeable near peer with whom they can identify, the seventh graders are expected to be much better motivated than they typically are when taught by an adult representing a different set of values.

At the beginning of the school year, 24 volunteers are recruited from among ninth grade algebra students in each of the three participating junior high schools to enroll in an additional course called Peer Teaching. This course, which is taught by a mathematics specialist, emphasizes both mathematics and teaching methods. Within the first three weeks, eight of the 24 volunteers are selected for continued training by the specialist, who meets with them an hour per day, five days per week. After an additional three or four weeks of training, these students gradually are permitted to present lessons to the seventh graders in their own classroom during regularly scheduled mathematics periods. As soon as they are fully capable, the students serving as teachers assume complete responsibility for the class two days per week. The class's regular teacher continues to instruct the class the other three days each week, and is present as an observer when the ninth graders take charge.

New instructional materials for seventh grade mathematics are being prepared as part of this program, but the materials represent refinements in standard content and the relevance of examples rather than new types of teaching methods. Both the peer teachers and the regular teachers base their instruction on the same curriculum, and both organize their instruction around the same, fairly conventional teaching methods. In the two years since the pilot program has been introduced, there have been no complaints from parents, and considerably enthusiasm on the part of the participating seventh and ninth grade students. Some teachers were at first reluctant to accept the program, but they all are thoroughly satisfied after experiencing it in their classrooms. Dr. Henkin points out, incidentally, that the focus of the project on mathematics and its implementation at the junior high school level were matters of convenience. He believes that the program could be equally effective for other subjects and at other grade levels.

One last point that deserves mention is the reported use of various kinds of interactive tutoring programs overseas. In Brazil, Keller (1968) developed a highly individualized introductory course in psychology for university students which included the use of proctors who already completed the course as judges of whether each individual has successfully mastered the content of each course unit. In Korea, the staff of the Elementary School Mastery Learning Project (Lee, 1971) has initiated an experimental educational program in which small groups of two or three students meet regularly for as long as an hour at a time to cooperatively review each other's test results on measures of unit achievement and to discuss items missed by any of the group participants. And last, but not least, the Laubach's (1970) have long used volunteers, who receive several hours of training and subsequent supervision, to individually tutor others in basic literacy.

C. The Development of Tutor-Based Systems

In the studies and programs described so far, emphasis more or less has been on tutorial procedures as methods of enhancing the individualness of the educational process. The tutoring itself was introduced as a means of remedying apparent defects in existing, teacher-based instructional systems. Whether the gains anticipated were social, or academic, or both, and whether the gains were expected among the tutors, or tutees, or all participants, these efforts were directed at identifying ways in which the tutorial process usefully could supplement more traditional classroom methods. This is not the only possible approach, however. It is instead possible to begin with the tutorial concept and then construct an entire instructional system around the use of students or other non-professionals as the system's teaching resources. This is the case in the programs which remain to be considered, where tutoring _is_ the instructional process.

One of the earliest of these programs was the "Tutorial Community Project" begun by Ralph Melaragno and Gerald Newmark at the Pacoima, California, Elementary School in 1968. In this project, which has been sponsored by the Ford Foundation, tutoring "is school-wide with all students involved as either tutors or learners; the program now is a primary vehicle for reading instruction and not either an appendage to the 'regular' program or a piece meal effort limited to a few students" (Melaragno, 1972). A number of tutoring approaches are used. First, intergrade tutoring was introduced, in which older elementary students tutor younger ones on a regular basis during normal school hours. Second, intraclass tutoring was added, in which students in the same class are paired or organized into small groups on the basis of who needs help and who is available to give it. Third, other tutoring techniques were then promoted, such as the use of students at a nearby junior high school to tutor upper-grade elementary students, the use of older students to supervise younger ones or act as guides for projects or trips, and self-tutoring in which students follow the general procedures of a tutorial session, but work alone. In addition, teachers provide assistance to small groups of students organized according to need, parents tutor their own children at home, and the teachers even help each other through three and four teacher teams.

From the very beginning of this project, emphasis has been given to individualizing instruction on the basis of need. For this reason, the intergrade tutors, who always are volunteers, meet with the younger child's teacher weekly to clarify that child's individual learning requirements and to receive suggestions and training in how to overcome these difficulties. The process used by the tutors is based on the same general approach used to prepared programmed instruction materials. This includes the clear specification of instructional objectives, the skilled preparation of tailored activities and procedures to reach these goals, the frequent supply of information to the learners about their progress, and the continuous monitoring and modification of the instructional system. Tutors are trained, with the teachers present, through a series of six workshop sessions. These sessions include learning about the kinds of learning problems younger children can have, and role-play exercises to provide practice in tutorial teaching. The cooperation of all of the participants in the project has been stressed since it began. For this reason, planning and decision making duties are shared among administrators, teachers and parents, and effective interpersonal relationships are fostered to create what is expected to be a "self-renewing institution", or "tutorial community".

In the first of two specific studies on this program of tutorial instruction that were carried out (Melaragno, 1972), 40 kindergarten pupils who were tutored by older elementary school students for 20 minutes per day all were reading first-grade materials by the end of the year, and a few had completed the full sequence of first-grade work. In the second study, 25 first and second grade students gained 8.3 months in reading during a ten week period; at the same time, the fourth and fifth grade students who served as their tutors gained an average of 5.2 months. The most impressive data, however, is shown in the following table which reports the median scores in percentile form from standardized reading tests given each year (from Melaragno, 1972, and with additional data supplied by him):

	1969-70	1970-71	1971-72	1972-73
1st grade	23	34	43	65
2nd grade	5	19	28	36
3rd grade	5	5	20	39

These figures demonstrate not only a substantial gain in reading skill as a function of the program (intergrade tutoring was not school wide until the 1971-72 school year), but also the steady growth in gains each year as students and teachers become more familiar with, and committed to, the program.

A somewhat similar, school-wide tutorial reading program has been described by Ebersole and DeWitt (1972). This project, at the Soto Street School in Los Angeles, also has been underway for several years. It uses a mixture of intergrade and in-class tutoring in which all students participate. A typical intergrade session begins with a word review during which the tutor presents flash cards prepared for the lesson so the tutee can practice problem words. In the next segment of the session, the learner reads from the text, beginning with the last portion of the story covered the day before. While the tutee is reading, his tutor listens for correctness, and occasionally checks comprehension by asking the younger child to summarize what he has just read in his own words. A record is kept of words the learner is unable to read without help. When the fifth word is reached in a session, reading stops, and the tutor and tutee work together to prepare flash cards containing these problem words which are then used for another period of word study. The cycle may continue if there is time, but each session is limited to about twenty minutes.

To permit the use of tutoring as the regular method of reading instruction, half of the younger children have their reading class during the first hour, before the other children arrive, and the others learn reading from their tutors during the final hour of their school day, after the first group has left. This staggered schedule solves the problem of the space needed for the pairs of tutors and tutees. The reading period for the older children is divided into three segments. In the first and third segments, half the class goes to tutor younger children while the remaining half learns reading from their regular teacher. During the second segment, intraclass tutoring is used, with the children taking turns helping each other with their reading. Training for the tutors is given in a five-day program which is then supplemented by additional training throughout the year. There is also a guide for the tutors which is kept by the tutee so it will be available when needed during tutoring sessions.

The results of this program (Ebersole and DeWitt, 1972) resemble those obtained at Pocoima. The table below shows the percentage of students scoring at Stanine 4 or higher (Stanine 3 or higher for the third graders) on the Stanford Reading Test at the end of each school year (tutoring at the second and third grade levels was not begun until 1968):

	Prior Years	1967-68	1968-69	1969-70
1st grade	4	25	35	41
2nd grade	15	--	54	70
3rd grade	30	--	51	66

Again, as in Pocoima, scores have improved progressively each year as the procedures are refined and as the students and teachers become more familiar with the program. There also is steady growth from participating in the program over a number of years. Only four percent of those who were first graders in 1966-67 were at the fourth Stanine or higher in reading for their grade level, but 81 percent of these same students were at this point or above by the end of their fifth grade year in 1970-71.

Still another carefully structured tutorial system has been developed by Woolman (see Gartner, Kohler and Riessman, 1971). In this program, called the "Micro-Social Pre-School Learning System", instruction is based on specially prepared materials, and same-aged, pre-school children work together in pairs to help each other learn. The teacher plans and supervises what goes on in the classroom but does not teach. The activities of the pairs of children are highly structured, and are directed toward reviewing and checking each other's work as well as giving each other assistance on the program's learning modules.

Bright and his associates at the Western Institute for Science and Technology have created what they call the "Vanguard Teaching Model" which combines tutorial instruction, individualized instruction and contingency management into a comprehensive learning system that is both cost and learning effective (Bright, 1972). Here, again, the tutors are an integral part of in-school instruction rather than simply resources for remedial programs. In the Vanguard model, each of the older children serving as tutors is responsible for the learning of several younger children. The program is limited to reading instruction, however, and therefore occupies only a portion, usually an hour to an hour and a half, of the regular school day.

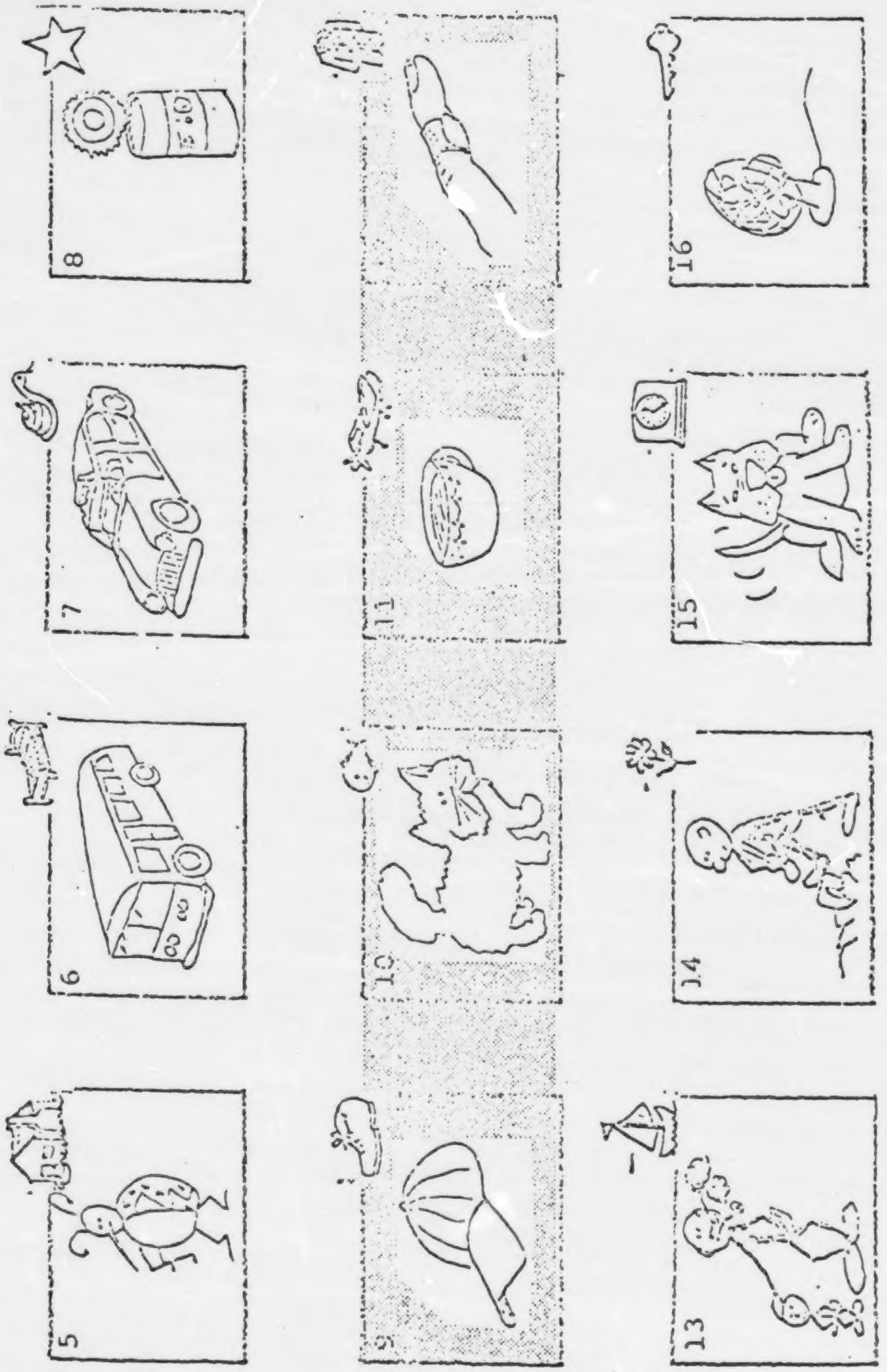
At the beginning of each session, the learner is assigned an individual learning task by his tutor, who also is responsible for the work of between two and ten other students. As soon as the learner completes the task, which usually is in the form of one or more exercise sheets, he takes it to his tutor for evaluation. If he has reached the preset criterion level, the learner is awarded some number of "points" by the tutor delivered by punching holes in the learner's record card. If he has not reached the criterion, he must repeat the lesson. If the learner fails the same unit subsequently, he is assigned an alternative exercise or, if necessary, given individual help by the tutor. The use of contingency management incentives are crucial to the system. No punishment is ever given. Instead, progress through the units, as well as his apparent concentration and other desirable learner behavior, is rewarded with "points" which can be traded, at any time during the learning session, for permission to spend time in any of a number of desirable activities in a separate "recreational" area supervised by additional tutors. Here, the learner can play with toys and various games, draw, or do other things he considers fun. Alternatively, points can be saved and later traded for trips to buy ice cream, to the zoo, or for invitations to parties. The tutors also are rewarded by points which they similarly can trade for desirable prizes and activities.

The learning tasks assigned by the tutors are determined on the basis of diagnostic test results and the learner's actual progress through the instructional exercises. Wall charts are used to help the tutors formulate an accurate prescription, or assignment, for each child each day. When appropriate, the tutors also are expected to devise new activities, particularly for problem students. The use of these informal materials, as well as tutor-suggested deviations from the laid-out sequence of exercises, always must be checked with the teacher before being implemented. Because of the amount of responsibility given to the tutors, they are closely supervised. In addition, they participate in a 10 to 15 hour training program where they learn to arrange the learning areas, prescribe lesson assignments, check student work, reward learners with points, avoid giving punishment, and maintain records. This training also is in the form of exercises, and includes role-play activities. Also, all tutors meet together at the end of each day's session to discuss problems and to plan the following day's program with the participating teachers and project personnel.

Two types of materials are used in the Vanguard program. One is the SWRL Reading Series (which will be described shortly), and the other is the WIST Reading Program being developed by the Western Institute for Science and Technology. The SWRL materials are presented by the tutors to groups of four learners at a time who are instructed as a group. The WIST materials are used individually, with each learner working by himself. Which materials are to be used by any one learner is decided by the tutors and teachers who base their decisions on that child's learning needs. The WIST Reading Program is designed for beginning learners and teachers them the sounds of 21 letters plus the sounding out of one syllable, regularly phonetic words made up of these letters. At the end of the program a student is able to read more than 200 words on his own. The student materials consist of exercise sheets, recorded tape cassettes and various enrichment and remedial materials such as story tapes and word books. A brief sample from an early lesson in a draft version of the program has been reproduced on the following two pages. As the student looks at the strips of pictures, he hears the script portion on his cassette recorder which he operates by himself. The "labels" in the upper corner of each box permit children who cannot read numbers to follow the step-by-step instructions on the tape.

The Vanguard program has been tried out in a number of different settings, and the results are encouraging. In one study, 29 five-year olds tutored by sixth graders using the WIST materials increased their scores on the Metropolitan Reading Readiness Test from the 7th to the 44th percentile in six months (Bright, 1972). In another study, 17 first graders were tutored by a group of eight fifth-grade students, again with the WIST materials. During the six weeks of the demonstration project, the average learner gained six months on the Wide Range Achievement Test (Bright and Colosimo, 1971). It is important to note, too, that improvements appeared in the behavior of both the learners and the tutors as a function of the incentive program. The operating cost of the Vanguard System, when fully implemented, is expected to be less than that of a normal classroom because the tutors are unpaid and the teachers can handle larger classes for reading instruction.

BEST COPY AVAILABLE


5
6
7
8
9
10
11
12
13
14
15
16

Sample material from the WIST Program (student worksheets).

BEST COPY AVAILABLE

In the house box is a picture of a bug. Say bug. Touch the bug with your pencil.

Now look in the bed box. In the bed box is a picture of a bus. Touch the bus. Now say bus.

Are you ready for the snake box? This is a picture of a cab. Say cab.

Now touch the cab with your pencil.

Are you ready for the star box? This is a picture of a can. Touch the can. Say can.

Now let's go to the shoe box on the next line. In the shoe box, touch the picture of the cap. Say cap.

In the fish box there is a picture of a cat. Touch the cat. Say cat.

Look at the picture in the airplane box. Do you know what it is? It's a cup.

Let's go to the boat box. It's on the next line. In the boat box there's a picture of a dad. He has his hand on his little boy's head. We'll call that picture dad. Say dad. Touch the picture of dad with your pencil.

Sample material from the WIST Program (taped instructions).

BEST COPY AVAILABLE

Another materials-based program, this time in spelling, vocabulary and other remedial English skills, is described by Rosenbaum (1973). This project has been a cooperative effort between Teachers College of Columbia University and the American Telephone and Telegraph Company. His model, called "Peer-Mediated Instruction", grew out of earlier work with computer-assisted instruction of the kind in which the sequence and content of each step in the lesson is determined by the student's response to the preceeding steps. It was recognized, that although this type of CAI has considerable merit, it well could be too expensive a process to be adopted widely by the schools. As an alternative, it was proposed that students could work in pairs, with each student taking turns simulating the role of the computer for his partner.

The first project making use of this approach was conducted with 20 third grade students in a New York City public school. The content consisted of a series of exercise materials designed to teach the correct spelling of 120 words. At the beginning of each learning session, the participating students are randomly paired, with each member of the pair alternately serving as tutor and learner. During the lesson, the tutor reads a list of words to be spelled, along with a sentence containing the word. Fourteen words are presented in each lesson, as shown in the sample on the following page (Rosenbaum, 1973, p. 43). As each item is read aloud, the learner attempts to write down the spelling. If he is correct, the tutor continues on with the next item; if he is wrong, the tutor crosses-out that part of the learner's spelling which was incorrect and asks him to try again. If the learner is right on his second attempt, the lesson proceeds. If he is wrong again, the tutor crosses-out the errors in the second attempt and then himself writes out the correct spelling for the learner. The following item in the lesson is then presented. After the first pass through the lesson has been completed, a second pass is made, but this time only those items that had not been written correctly by the learner in his first attempt on the preceeding pass are included. The lesson continues in this fashion until every word has been spelled correctly during a first attempt.

BEST COPY AVAILABLE

MY NAME IS ______________ LESSON 1
MY BUDDY IS ______________ DATE __________

☐ green	Mrs. Turtle wore a green shell.	green
☐ weed	Robert wants to let the weed grow.	weed
☐ teeth	Without teeth, I wouldn't have fun eating.	teeth
☐ meat	I dreamed I ate candy and meat for lunch.	meat
☐ lean	If you lean the other way, you'll fall.	lean
☐ mean	I look mean in my Halloween mask.	mean
☐ she	She sneezed a mighty sneeze.	She
☐ room	Let's find the room with all the toys.	room
☐ spoon	Use your spoon to stir the soda.	spoon
☐ toot	Toot is the only word the train can say.	toot
☐ food	I ate all the food on my plate.	food
☐ true	It's not true that I am a cowboy.	true
☐ blue	Blue rhymes with true.	blue
☐ glue	My glue bottle stuck to my desk.	glue

Sample material from the PMI Program (tutor presentation).

In this project, which required almost no training of the tutors, student performance on a test of a sample of the words in the eight lessons increased from 45 percent correct to 69 percent correct, with individual students showing an increase of from 10 to over 40 percentage points. The average student completed all the lessons in a total of an hour and a half of instruction. A more recent study involving 252 junior and senior high school students in Jackson, Mississippi, focused on remedial English skills. In this experiment, which followed the same general approach of the Peer-Mediated Instruction model already described, the average student at each grade level gained at least one full year on the Nelson Test over a period of one month of instruction. In the Jackson study, the materials were designed to be reusable and, on the basis of their cost, it was calculated that such a program could be installed elsewhere for less than 70 cents per participating student (Rosenbaum, 1973).

A model developed by Niedermeyer and his associates at the Southwest Regional Laboratory for Educational Research and Development also recognizes the importance of preprograming the tutor's activities. This system is based on SWRL's "Beginning Reading Program", published by Ginn and Company, which is a comprehensive reading curriculum for elementary schools and begins at the kindergarten level. Even at the end of this first year of instruction, most children who learn from the program are able to recognize the words on a basic work list, sound out unfamiliar words, and demonstrate their comprehension of text built around the basic words. Three accompanying tutorial programs have been prepared for use with the Beginning Reading Program. These may be used separately or together.

The first model to be developed consisted of a remedial program using fifth and sixth grade tutors to help kindergarten children who were having difficulty with the reading materials (Niedermeyer and Ellis, 1972). The key principle for this model was that when a learning task requires considerable practice, non-professional tutors can be used effectively to strengthen learning originally acquired from the classroom teacher. Highly structured materials, thorough tutor training and an effective management system are essential to making such a program work, however. These components are particularly important to this program, which is organized around non-aversive, contingency management concepts similar to these used by Bright.

Tutors are encouraged to be warm to their pupils, praise them frequently, and avoid adding prompts to those which already are in the materials. Only when a learner's response is incorrect is the tutor to demonstrate the correct answer to him. Tutoring sessions are twenty minutes long and are held three times per week during regular school hours. Kindergarten children are assigned to tutors if they fail to pass the tests given at the end of the first four weeks of teacher-based instruction, and specially prepared remedial exercises are prescribed for each tutee based on his own test results. This cycle is repeated after each subsequent three-week learning unit. The tutors are trained by the kindergarten teacher.

An evaluation of this program was conducted during the 1968-69 school year. Pupils in four schools where tutoring was being used were compared with pupils in four similar schools who received their remedial instruction, when needed, from their regular teacher and from the same remedial exercises used by the tutors. The gains made by the 57 children helped by tutors was significantly greater than the gains made by the 39 pupils helped by their own teachers. A similar study in the following year yielded similar results, with those receiving remediation from both their teachers and tutors gaining some six times what was gained by those pupils who received remediation from their regular teachers alone (Niedermeyer and Ellis, 1972).

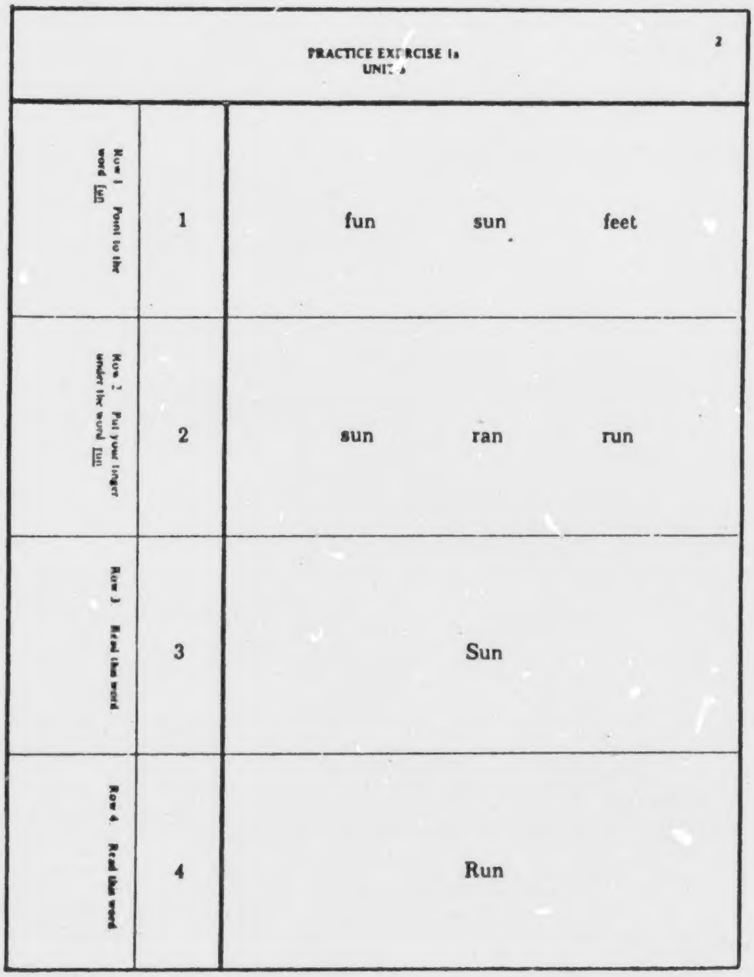
A second model, which uses the same basic tutorial approach designed earlier for cross-age tutoring, has been devised for use by the parents of kindergarten children as part of the regular reading program. Here, the materials and tutorial sessions are used to augment the practice every child receives instead of serving as remedial help only for those pupils who need it. This "Parent Assisted Learning" program requires about 15 minutes at home on four days of each week. Three of the sessions are devoted to practice exercises adapted from the cross-age tutoring program and the fourth to a learning game. There also are story books which the children take home to read to their parents. A guide has been prepared for the parents which explains what they are to do, and there also are role-play exercises for parents if the school wishes to use them. In an early test of Parent Assisted Learning in a middle-class school district, it was found that efforts to generate parental interest through an accountability system managed by the teachers resulted in an average completion rate of about 92 percent of the at-home lessons. Students who had the benefit of parent-led practice averaged 83 percent on a posttest while those who did not averaged only about 55 percent (Niedermeyer, 1969).

The third model, which uses a slightly different set of materials but which also depends on parents to serve as tutors, is designed for summer use after a child has finished a year of the Beginning Reading Program. This model is designed to maintain a child's reading proficiency over the summer through a series of tutoring sessions scheduled 15 minutes per day, three days per week, for ten weeks. An example from the cross-age tutoring program, which includes directions as to what the tutor is to do along the side of the sheet the younger child faces, is shown on the following page. The next page contains a sample of three lessons used in one week of the Parent Assisted Learning Program. The page after shows an example of the role-play practice parents are given to learn how to conduct the PAL tutoring sessions.

Niedermeyer feels that effective tutoring programs involve "much more than simply placing tutor and learner together and hoping that 'something good' will happen". It is his belief that a thoroughly structured system is essential to large-scale implementation. Without structure, tutor-based instruction may be inefficient and ineffective. A teacher may have the training, background and experience needed to salvage instruction based on poor materials, but this is beyond a tutor's capability. His research has shown that the tutors, whether older students or the child's parents, also must be trained carefully if the program is to work. However, because of the support provided by the materials, training can be accomplished in only one or two hours. The same methods have been, and are being, tried for a number of other content areas by SWRL, including spelling, elementary composition, handwriting, punctuation and articulation. The most difficult problem being faced in these projects is how to help children overcome errors, what the tutor is to do when the child makes a mistake. Teachers often have no special skills to use in dealing with a faulty composition, for example. They can only assign, which isn't really teaching.

One of the most experienced creators of highly structured tutorial programs is Grant Harrison at Brigham Young University. He sees his approach as a combination of the tutor-like functions cited by Skinner as a prototype

BEST COPY AVAILABLE



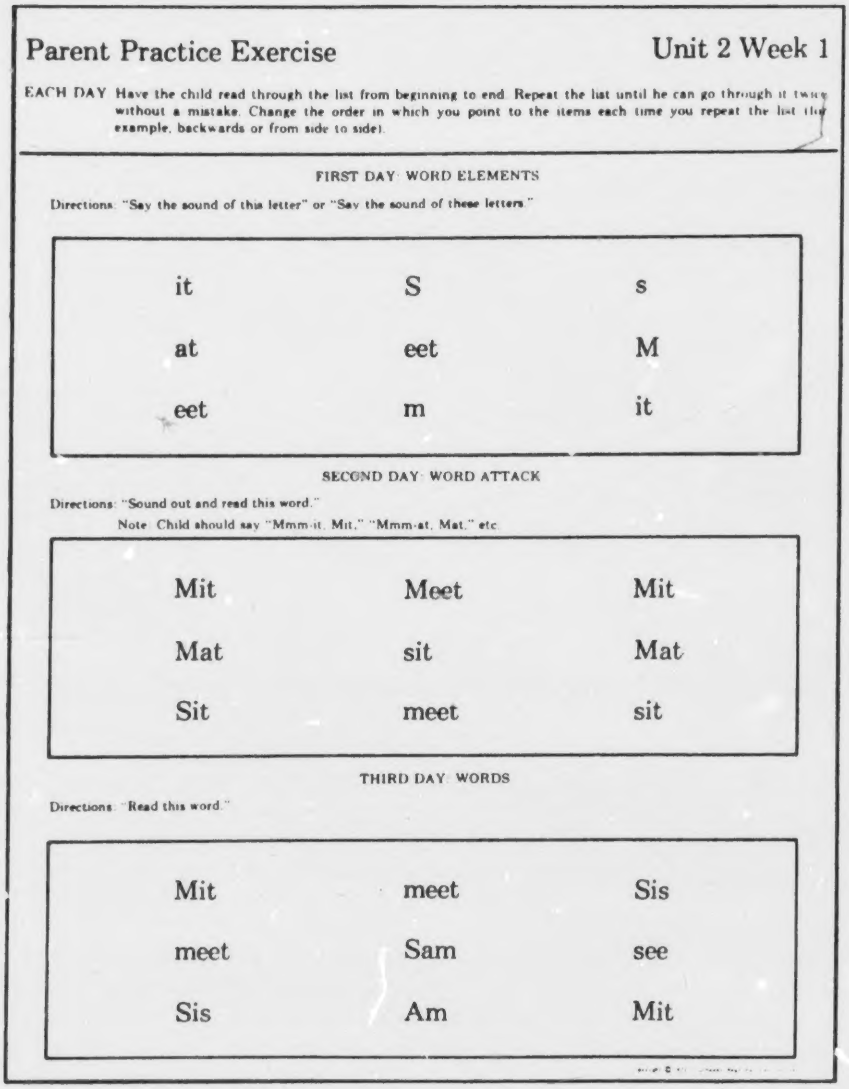
2

PRACTICE EXERCISE 1a
UNIT 6

Row 1 Point to the word fun	1	fun	sun	feet
Row 2 Put your finger under the word run	2	sun	ran	run
Row 3. Read this word.	3	Sun		
Row 4. Read this word.	4	Run		

Sample of material from the SWRL Program (cross-age tutoring model).

BEST COPY AVAILABLE



Parent Practice Exercise **Unit 2 Week 1**

EACH DAY Have the child read through the list from beginning to end. Repeat the list until he can go through it twice without a mistake. Change the order in which you point to the items each time you repeat the list (for example, backwards or from side to side).

FIRST DAY: WORD ELEMENTS

Directions: "Say the sound of this letter" or "Say the sound of these letters."

it	S	s
at	eet	M
eet	m	it

SECOND DAY: WORD ATTACK

Directions: "Sound out and read this word."

Note: Child should say "Mmm-it, Mit," "Mmm-at, Mat," etc.

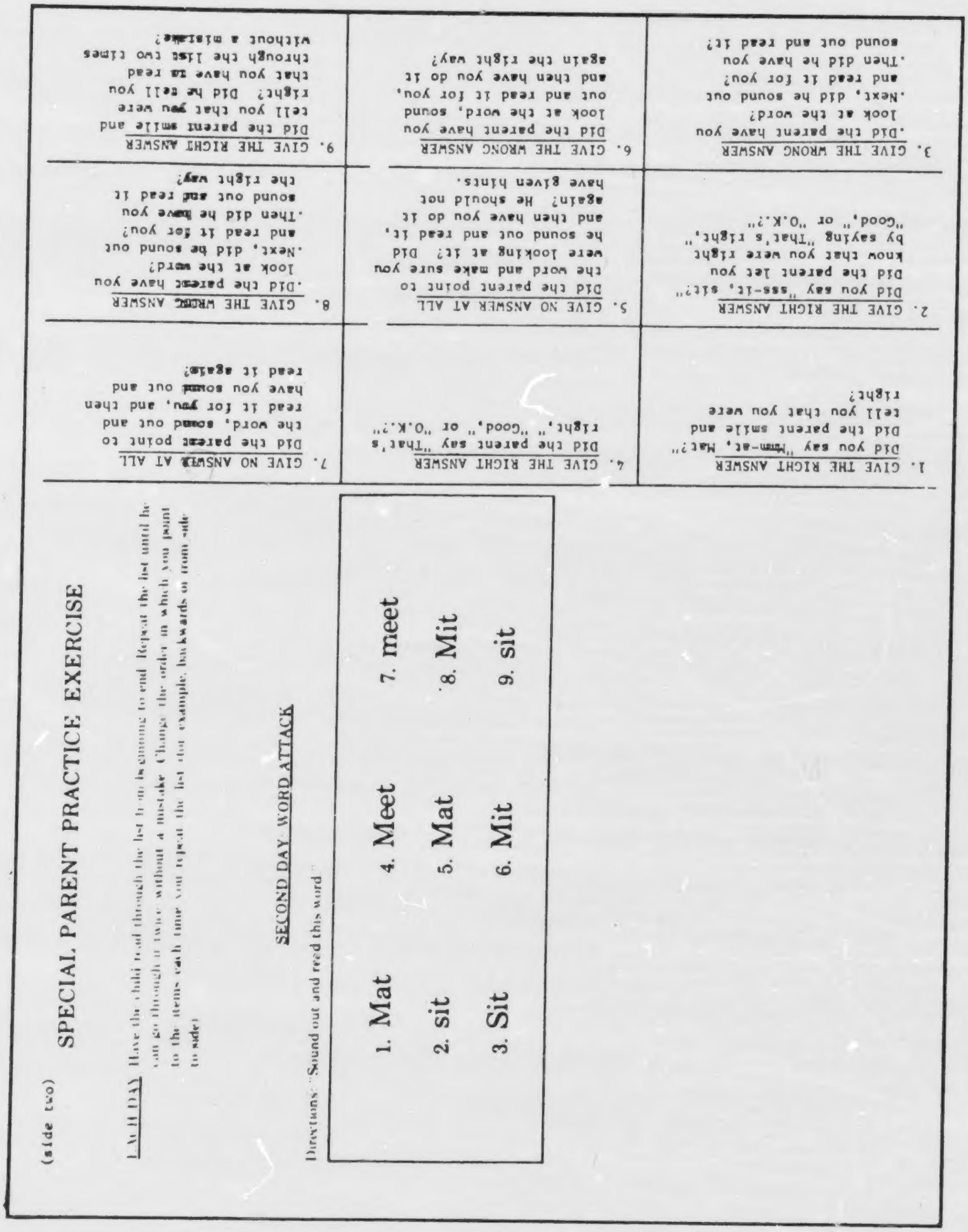
Mit	Meet	Mit
Mat	sit	Mat
Sit	meet	sit

THIRD DAY: WORDS

Directions: "Read this word."

Mit	meet	Sis
meet	Sam	see
Sis	Am	Mit

Sample of material from the SWRL Program (parent-assisted learning model).



(side two)

SPECIAL PARENT PRACTICE EXERCISE

EACH DAY Have the child read through the list from beginning to end. Repeat the list until he can go through it twice without a mistake. Change the order in which you point to the items each time you repeat the list (for example, backwards or from side to side)

SECOND DAY WORD ATTACK

Directions: "Sound out and read this word."

1. Mat	4. Meet	7. meet
2. sit	5. Mat	8. Mit
3. Sit	6. Mit	9. sit

1. GIVE THE RIGHT ANSWER Did you say "Mmm-at, Mat?" Did the parent smile and tell you that you were right?	2. GIVE THE RIGHT ANSWER Did you say "sss-it, sit?" Did the parent let you know that you were right by saying "That's right," "Good," or "O.K.?"	3. GIVE THE WRONG ANSWER .Did the parent have you look at the word? .Next, did he sound out and read it for you? .Then did he have you sound out and read it?
4. GIVE THE RIGHT ANSWER Did the parent say "That's right," "Good," or "O.K.?"	5. GIVE NO ANSWER AT ALL Did the parent point to the word and make sure you were looking at it? Did he sound out and read it, and then have you do it again? He should not have given hints.	6. GIVE THE WRONG ANSWER Did the parent have you look at the word, sound out and read it for you, and then have you do it again the right way?
7. GIVE NO ANSWER AT ALL Did the parent point to the word, sound out and read it for you, and then have you sound out and read it again?	8. GIVE THE WRONG ANSWER .Did the parent have you look at the word? .Next, did he sound out and read it for you? .Then did he have you sound out and read it the right way?	9. GIVE THE RIGHT ANSWER Did the parent smile and tell you that you were right? Did he tell you that you have to read through the list two times without a mistake?

Sample of material from the SWRL Program (parent training exercise).

BEST COPY AVAILABLE

of programmed instruction and the detailed directions that are central to the individualized audio-teaching concepts of Postlethwait and others (Harrison, 1972). These two ingredients are particularly necessary when working with students who cannot as yet read. Most of Harrisons's attention, in fact, has been directed at an introduction to reading for non-readers. The basic materials used in these efforts are his Beginning Reading Program which is being published by Brigham Young University Press. The first volume of this course already is available and the second volume now is in production. The materials themselves are very precise, but somewhat limited in their objectives. Not all sounds are covered, although a student who completed the first book is able to read a number of simple stories based on what he has learned. At the end of the second book, he is expected to be able to read far more complex materials using words such as "bracelet", "circumstances", "vengeance", or "sacrilegious".*

Very elaborate instructions have been prepared for the tutors on what to do at each step of the program. Learners are first pretested using a three part test. Part I consists of naming the 25 letters of the alphabet included in the course ("q" is omitted), and indicating the most common sounds of 20 consonants, 5 short vowels and 8 digraphs (as, "ch"). Part II measures the student's ability to decode single and multiple syllable nonsense words. Part III is a test of recognition of the 200 sight words that make up the bulk of the words in the stories to be read at the end of the course. On the basis of the child's performance on the test, profile sheets are prepared by the tutor so that whether the child has the skill needed to sound out and decode nonsense words made up using each letter is established. Tutoring then begins based on flash cards prepared to represent each of the possible individual skills that child needs to master. Instructions to the tutor on how to use the cards, what to say, and even how to arrange the chairs for the tutorial session are carefully laid out for him. The student gradually proceeds through increasingly complex decoding exercises and on to reading the stories. For most situations, it is recommended that tutoring be limited to one half hour per day. Between 8 and 15 hours are required to complete the first volume. An example of the directions to be followed by the tutor when using the first volume is reproduced on the following page. A similar sample from a draft version of the second volume is reproduced on the page after it.

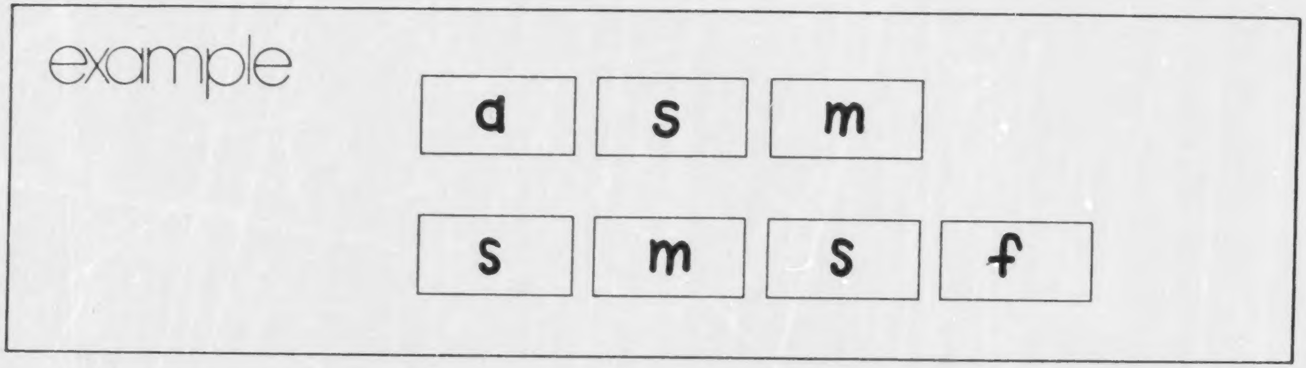
---

* Whether a learner who, at the beginning of the volume, is unable to correctly pronounce words ending in a silent "e" (as, "cake") or sight read irregular words such as "plumber" or "knife", has any comprehension of the meaning of the words he will learn to read is problematic, however.

As Harrison points out (1972), "the tutoring relationships and the use of the instructional materials are relatively complex tasks which cannot be left to chance". To make sure this is accomplished, the tutors are given an intensive training program lasting four to eight hours. In this time, the tutor learns the importance of diagnostic pretesting, the prescription of learning exercises based on that child's needs, the use of established principals of contingency management during the learning sessions, and the maintenance of accurate and detailed records. Unlike many other programs, Harrison's "Structured Tutoring" teaches reading completely independently of the teacher, who often will manage the program but who is not expected to teach herself. The learners for whom this program is intended may be beginning primary school students, older and often disadvantaged students who are having reading difficulty, or even illiterate adults. The tutors can be older children, para-professional aides, parents or volunteering adults, and frequently mixtures of these resources are used simultaneously.

The results obtained with this approach have been positive but modest. In a series of unpublished papers, Harrison and his associates report on several studies that have been conducted. In one of these, 100 six year old and 43 seven year old non-readers in Provo, Utah elementary schools were taught the contents of the first volume of Beginning Reading over a six-week period by volunteering upper-grade pupils. The six year old students rose from an average of under 20 percent on the pretest to over 70 percent on the posttest. Comparable results were obtained for the second graders. Also, approximately 60 percent of the first graders were able to read stories for themselves by the end of program. In another study, 156 non-reading second graders obtained an average score of over 80 percent on the end-of-program test, helped by fourth, fifth and sixth grade students. Tutoring sessions were fifteen minutes in length, four days per week, for five months. The performance of these learners, after tutoring, was then comparable to that of students of the same age who were not in need of

BEST COPY AVAILABLE



Explanation: *The student has learned* a *and* f *from rehearsing the answers,* m *was the first new stimulus introduced, and* s *is the latest new stimulus being introduced.*

- Drill the student until he is able to answer correctly each time the second new stimulus comes up for approximately five minutes. When he has accomplished this, follow the procedures below to teach the third new stimulus.
  1. Remove one more flash card for the first new stimulus taught (e.g., *m*).
  2. Remove one of the three flash cards for the second stimulus taught (e.g., *s*).
  3. Add three flash cards for the third stimulus to be taught (e.g., *n*).
  4. Follow the drill procedures for teaching the first new stimulus.

Sample of material from the Beginning Reading Program (first volume).

BEST COPY AVAILABLE

Step 1

"I'm going to teach you a simple rule that will help you read words that begin with the letter w. Here is the rule:

> When a word begins with the letter w and the w is followed by the letter r, the w is silent.

"For example, let's look at this word: write

The w is the first letter in the word and is followed by the letter r, so we know that the w is silent. By applying the phonetic rule that you have learned previously regarding the silent e and the long vowel, the word would be pronounced rīt."

"Let's apply the rule to another word: wring

Once again, the word begins with the letter w and the w is followed by the letter r, so the w would be silent and the word would be pronounced rĕng."

Sample of material from the Beginning Reading Program (second volume).

remedial help.

Some work has been begun using Harrison's model in Micronesia, Bolivia and, more recently, Guatamala. Data, however, are available only from Bolivia where the materials, converted into Spanish, were used to teach reading to illiterate adults. The tutors for this project were local and expatriate adults who received six hours of training. The tutors met with the students, usually in the student's home, three to five times per week for close to one hour per session. The sessions continued for a period of three to five weeks. Not all of the 40 participants completed the course within the data collection period, but the gains they made resulted in post-test scores of 50 to 70 percent on the various skill tests used. The program also has been tried on underprivileged Bolivian children.

Another highly structured basic reading program was developed overseas by Douglas Ellson for the INNOTECH Regional Center for Educational Innovation and Technology in Southeast Asia (Ellson, et. al., 1973). This experimental program, which corresponds roughly to the first third of beginning instruction for children learning to read Bahasa Malaysia, is designed to teach groups of up to 12 children at a time. The "teachers" for the program, however, are adult community members who themselves need not have more than a sixth grade education. This use of relatively untrained, unqualified teachers is made possible by the careful selection and thorough tryout of the subject matter, the instructional materials and the teaching techniques that comprise "Programmed Teaching". Much of the approach used, incidentally, is based on studies carried out by Ellson and his associates in the late 1960's on the use of tutors to teach reading as a supplement to conventional teaching.*

The content of the experimental program covers the pronunciation of sounds represented by 23 letters (words using "Q", "X" and "Z" are infrequent in the Malay language), the recognition of the first 12 numerals, and 66 specific words. By the end of the program, a student should be able to decode and sound-out most of the regular words in his language. The course materials consist of a guide for the "teacher", a blackboard, and flash cards with letters, numerals, pictures or words printed on them. There also are cards to use in rewarding children when they answer correctly during the teaching sequence. Both individual and group modes of responding are required at various times according to directions contained in the teacher's guide. One small section of the guide is reproduced on the following page. This part of the guide is concerned with the content of each of the 64 lessons in the program. Other sections of the guide describe the teaching methods to be applied to each lesson, the procedures for playing the accompanying word games, and the principles to be followed for managing the class.

---

* Reported in the Reading Research Quarterly, vol. 1, no. 1, 1965 and vol. 3, no. 3, 1968.

The INNOTECH program was tried out on groups of first year students enrolled in ten rural elementary schools in Malaysia. Students selected for the experiment, as well as those chosen to represent an equivalent control group, were those toward the lower end of their classes on a pretest of reading skills. Both the experimental and the control students received one hour of traditional reading instruction each day from their regular classroom teachers. The experimental students received an additional half hour of Programmed Teaching, while the control students spent the same amount of time in further reading instruction with their regular professional teachers. The experiment continued for 55 school days. On the posttest, which included subtests for words, sentences and comprehension, the experimental group demonstrated a proficiency of 52 percent while the control group scored 46 percent, a statistically significant difference (Ellson, et. al., 1973).*

---

* It is unfortunate that an "add-on" rather than a more straightforward comparison was used as the research design for this study in that it failed to provide evidence as to whether Programmed Teaching is reasonably effective in the complete absence of a professional classroom teacher; the difference, in fact, may be as attributable to the experimental group having two kinds of instruction as it is to their having better instruction.

Lesson 8. Teaching Lesson. Use Item Program II: Oral answer.
Use Letter set A.

Preparation: Leave the letters on the blackboard. Do not rearrange.

Step 1. WHAT IS THE SOUND OF THE LETTER __________?
(Point only if necessary).

Lesson 9. Review Game. Use Letter-set A.

Task: WHAT IS THE NAME AND THE SOUND OF THIS LETTER?

Lesson 10. Teaching Lesson. Use Item Program III: Word Sounding.
Use letter groups shown below.

a d a   i b u
b u k u   n a s i
s a y a

Preparation: Print the letters in word-groups on the blackboard, spaced as they are shown above.

Step 1. WHAT IS THIS WORD? (Point to one "word".)

Lesson 11. Teaching Lesson. Use Item Program III: Word Sounding.

Preparation: Arrange word-set B on the blackboard.

Step 1. WHAT IS THIS WORD? (Point).
Note: Rearrange the cards after each round.

Lesson 12. Review Game. Use Word-sets A, B.

Task: WHAT IS THIS WORD?

Sample of material from the Programmed Teaching Program (lesson content).

D. Discussion of Alternative Programs

The rather uneven coverage of relevant literature and operational projects presented in this Section leaves a sizable number of unanswered questions. Is it reasonable to expect that any proposed tutoring program will yield advantageous results? Should such a program focus on benefits to the tutors or the tutees? Are systems that by-pass the teacher "tutorial" in the same sense as those which stress "helping relationships"? It is possible to extrapolate any of these findings or procedures and apply them to the problems and circumstance of most developing countries? While there is no certain answer to any of these questions, it might be worthwhile to review the approaches already presented in order to arrive at some conception of the present state-of-the-art in using students as teaching resources.

To begin with, it should be clear that much of the attention so far showered on tutorial programs has centered on the process involved rather than the product achieved. Aside from a few, often widely publicized studies, much of the rapidly accumulating literature on peer-tutoring and other instructional uses of non-professionals has been of the "try it, you'll like it" variety. Only a small proportion of the reported projects have systematically investigated, or even considered, such problems as tutor selection, the length of tutorial sessions, or the cost-effectiveness of the program as compared with logical alternatives. Neither the socially nor the academically oriented approaches seem to have accumulated sufficient methodological insights to permit them to be transferred readily to other situations with reasonable guarantees as to their success.

Those tutorial programs intended to compliment traditional educational practices have created a great deal of interest and have attracted considerable support, but most of this enthusiasm necessarily is attributable to just two studies, the 1963-1964 pilot "Homework Helper" program initiated by Mobilization for Youth, and the 1967 pilot "Youth Tutoring Youth" program conducted by the National Commission on Resources for Youth.* Although both programs were continued for at least another five years, and expanded greatly in scope, no comparably impressive findings have since been reported, either as follow-ons to these original evaluations or as assessments of similar projects. The remaining findings that have been announced, including the second Youth Tutoring Youth evaluation, have ranged from only modest gains to insignificant differences.* While one would expect on the basis of the first studies that similarly satisfying results would be obtained subsequently, this has not been the case. Even if the outcomes of these early two studies are not considered to have been spuriously determined, it is clear that the factors critical to bringing such results about have not been identified with sufficient precision to permit the programs to be replicated with fidelity.

---

* In the former study, tutees gained nearly twice as many months in reading skill as their controls, while tutors advanced by 3.4 years compared with 1.7 years for their controls; in the later study, the Philadelphia tutors gained 1.0 years in reading skill during the six weeks, while the Newark tutors gained 3.7 years.

A second problem with this approach has been its emphasis on social as well as cognitive goals. Although both certainly are legitimate and useful goals in any society, their combination possibly is premature considering our knowledge as to how tutoring might bring about either. The most likely explanation of the gains made by tutees is that they are a function of the added practice they receive, although it also is quite probable that the individual attention given them by their tutor has an effect on their attitudes and, consequently, on their test performance. As to the gains made by tutors, it clearly is possible that attitudinal changes brought about by the recognition inherent in their tutorial assignment is a factor, but the efforts they make to devise exercise materials, the practice they get in the skills they are teaching, and the opportunities they have to observe errors which interfere with success are more likely to be the significant variables. It is unfortunate that that more concerted efforts have not been made during the past ten years of recent interest in peer tutoring to isolate these various factors experimentally.

A third problem is that most of the programs utilizing students in supplementary teaching roles have focused almost uniformly on urban, ghetto underachievers. This, of course, is a fairly unique segment of the population and, presumably, one that is characterized by poor motivation, lack of stimulation at home, and an uninspiring career outlook. The question is not whether this is an appropriate group to serve as recipients of innovative educational programs, because it certainly is. Rather, the question is whether the complex set of variables that act on this group to reduce their educational achievement can be separated out sufficiently to determine what is causing what. Obviously, a gain of 3.7 years in reading skill (among the Newark tutors in the Youth Tutoring Youth program) in six weeks of part-time participation hardly can be attributed entirely to new learning, as the project staff itself recognized (see Gartner, Kohler and Riessman, 1971, p. 31). One of the several, more likely alternative explanations is that the original test scores were abnormally depressed, and that any retesting would have shown gains, although perhaps not of this magnitude.

---

* The gain reported by Janowitz (1965) of a 1.4 year greater improvement in reading ability for disadvantaged children tutored for six months after school by volunteering adults as compared with children who recently entered the program, is perhaps a reasonable expectation; yet this outcome also may have been influenced by regression toward the mean and by the advantage of increased test familiarity.

A fourth problem is the possible cost of a tutorial program. In most of this group of programs, with the notable exception of the ones devised by the Lippitts and by Henkin, the tutors were paid for their efforts. While their amount of pay was considerably less than the $10.00 per hour or so the average elementary school teacher in the United States receives for instructional services, the teacher generally handles many more children at one time. At a cost of well over $1.00 per hour, students tutoring students may, despite its effectiveness, turn out to be affordable only for a very select segment of the school population. It is reasonable to propose, for example, that hiring an added career teacher for each school to work with groups of eight or ten children who needed extra help would produce the same, or possibly better, resuslts. And the cost would be equivalent to supplying each of these children with a paid peer tutor for the same amount of added assistance.

Turning now to the more structured programs, it is clear that these also have limits on their generalizability. First of all, most of the learning content dealt with in these programs has been relatively simple. Many teachers would contend, for example, that learning to "decode", or sound out letters and letter groups, is not the same as reading, and that this skill is considerably easier to teach than syntactical comprehension or other ingredients represented in all-around reading mastery. Expanding a structured tutorial system beyond the first few grades is going to take considerable imagination if many important educational objectives are not to be left out. There is always the option, of course, of reserving the straightforward factual content for this approach, and leaving objectives that depend on complex interactions to a skilled teacher, but this alternative is self-limiting and does not seem to carry with it the same promise of major improvements in education that have been aimed for by the programs which use students in unstructured tutorial roles. Also, it should be recognized that much of the learning that takes place in the first few primary grades is not academic, but social. Children at this age vary considerably in ability to concentrate, in their modes of interacting with other children, and in their self-images. Even at this level, then, flexibility and individuality may be important charactertics of the educative process. Learning to multiply fractions is not the same as learning to work together, and a program that omits either is not all there is to education. Some programs, such as those developed by Bright and by Melaragno, seem more turned to this view than others.

A second problem is that the use of tutors as agents for, rather than as sources of, instruction could prove to be a limitation. To begin with, it is likely that many of the academically oriented gains achieved by the tutors in some of the less structured programs were a consequence of the experience of preparing lessons rather then presenting them. By removing this responsibility from the tutor, associated opportunities for his learning also are reduced. Also, the instructional process itself, if highly structured, may prove less satisfying to the tutor than when he is permitted to vary his approach and be rewarded for the success of his own efforts and ingenuity. This could turn out to be an important constraint on the tutor's motivation, and well may be a significant factor in his longevity except where tutors are considered relatively expendable. Furthermore, the more structured programs are not likely to lead to the same degree of learned responsibility that is hoped for in most unstructed programs. Learning to show up for lessons is not nearly the same as learning to take responsibility for their outcomes.

A third problem is that many of the unique advantages of tutorial instruction may be diminished to the degree that the presentation is rigidly structured. One of the distinctive attributes of a tutor is that he is able to adapt the content, sequence and thoroughness of a lesson to meet the peculiar needs of each individual learner. This, above all, is the one thing that a regular classroom teacher has the most difficulty doing. Conceivably, tutors can vary the amount of repetition given, the degree to which marginal performance will be accepted, and eventhe instructional approach itself. They can be responsive to extremely subtle cues and use them to identify and diagnose learning difficulties. Although not all tutors are likely to serve these functions well, even after receiving training, it is questionable whether those systems which use the tutor solely as an agent are taking full advantage of the tutor's potential as an adaptive instructional instrument.

Finally, the costs of a highly structured tutorial system are as important a consideration as they are in programs which use paid, self-directed tutors. Most of the structured programs have required several years to develop and refine, and the cost of both creating and reproducing the materials, in most cases, has been substantial. Whether the time, resources and funds needed for such an effort are available everywhere remains to be determined. Furthermore, the cost of revising such a program needs to be considered. Although the content used to teach basic reading and arithmetic skills is not likely to change over a period of time, updating is an almost continuous requirement in areas such as science and vocational education. There also is the possibility that a very creatively structured program could achieve the outcomes similar to those cited earlier from Melaragno's Tutorial Community Project. Each year has yielded so substantial an improvement in the performance of children at the first three grade levels as to make instructional materials that formerly were suitable for the subsequent grade level obsolete.

In summary, the extremes of neither approach seem to be genuinely satisfying as paradigms for what could be. Both the tutorial process and the use of students as teaching resources should be useful educational techniques. It is not clear, on the other hand, that we know enough about either to take anywhere near full advantage of the potential they represent. Most certainly, the adoption of tutorial programs which have been unable to produce reliable increments in the performance of tutees who receive all that added instruction and attention will not solve the fundamental problem of making learning easier, faster or more thorough. And, while it is evident that highly structured approaches can lead with relative certainty to the mastery of needed skills, they nonetheless severly underutilize the capacity of the tutor to provide the individualization so surely absent in most classroom settings.

Approaches which represent neither of these extremes, but which instead utilize students because they are available, and emphasize adaptive instruction because it is often what is lacking, may be the most suitable for the developing countries at the present time. Thus, perhaps the best model is the one still visible in the few remaining one-room schools. In this setting, the teacher uses the tutor flexibly to complement her own capabilities and priorities, and organizes the tutor's activities without dismissing his initiative or constraining his social influence. Decisions as to the tutor's precise role, the number of children he will instruct, the length of the sessions, and the type of materials he will prepare or present are made by the teacher in response to the needs of the situation and the capabilities of the student chosen to be the tutor. There is no fixed program, structure or schedule. Rather, there is an opportunity to convert underutilized resources into educational assets.

IV. TENTATIVE MODELS

Considering the opportunities which exist in most developing countries to utilize students as teaching resources, a number of different models emerge as potentially useful system concepts. As noted earlier in this report, these models do not represent the full range of possible systems employing non-professionals in educational roles nor do they consider other classroom functions that can be contributed to by non-professionals, such as their use as aides, clerks or subject-matter specialists. These models, then, are concerned only with the ways in which students, or at least student-aged children, could provide increased educational opportunities for other children at the primary grade level in developing countries.

The four models described below are to some degree independent of each other. They draw upon somewhat different pools of students as the teaching resources and apply these resources to somewhat different problems and circumstances. These combinations are not necessarily limited to the pairings described in the models. However, they do represent sensible matches for use in exploring the potential value of each model in meeting the needs and conditions present in individual countries. An approach based on specific and detailed models seemed more appropriate for evaluating options during discussions in the developing countries visited than open-ended models which failed to present any entire system thoroughly, and thus did not explore all the consequences of adopting the model, such as training responsibilitites, materials requirements, or effects on teacher morale. The research design developed in the last phase of this survey afforded an opportunity to recombine the ingredients of the models to produce a more workable and beneficial system tailored to the unique requirements of specific developing countries.

Model I: In-Class Cooperation

Although not now widely used in the United States, except by Rosenbaum and Woolman, combining students within the classroom into interacting pairs or small groups does have considerable precedent in most typical play groups, in scouting activities and even as informal arrangements in many classrooms. The essential educational advantage of in-grade cooperation is the opportunity

BEST COPY AVAILABLE

it creates to allow relatively vast amounts of practice for all pupils compared with the more traditional method of having students recite or respond only directly to the teacher. This procedure obviously is confined to those classroom periods where student practice, with only limited amounts of guidance, is scheduled to occur. It would not be suitable for periods devoted to the presentation of new information. This model, then, is best viewed as an opportunity for students to rehearse or exercise newly learned skills to a greater degree than could be done in an exclusively teacher-oriented classroom.

The precise operation of this model would depend on three factors. These are the grade level of the students, their homogeneity or heterogeneity, and the lesson content to be practiced. Several sub-models can be described to illustrate how the system might operate in practice.

a. In the first grade, children learning number concepts and elementary arithmetic could be given sheets with two or three addition problems and a supply of bottle caps. The children all work at the same time, representing each problem (e.g., 7 + 2 = 9) in bottle caps and raising their hand when finished. The teacher inspects the work of the first two or three children who finish, giving them praise or help as necessary. Eacn child who has had his work corrected is then available to praise or assist other students. Since the best students tend to finish first, the least able students will be receiving help from the most able - without it being necessary for the teacher to designate selected students for this role. While students are helping other students, the teacher would be able to give an extra share of her attention to those having the most trouble, or to arbitrate disputes as to what is correct. All students would benefit from the added opportunity to have practice and, since the supervision of practice is one of the most limiting constraints on class size, a classroom could accommodate significantly more children without any reduction in the extent of useful activities.

b. In the second grade, children learning to read could be divided into small groups of three or four. Within these groups, the children could take turns reading aloud from a story previously presented to the class by the teacher. All children would have a far greater opportunity to read aloud than would be the case when a teacher calls on children successively to read to her. In addition, children are likely to be less aversive and more patient with each other than an adult would be. By using small groups rather than pairs, the probability is increased that at least one member of the group will have the necessary knowledge to determine whether the story is being read correctly or not, and to pronounce difficult words when necessary. An alternative, of course, would be to assign children differentially to pairs or small groups. Ad hoc groupings may be preferable, however, to prevent helper or helpee roles from becoming rigid. Once this system was operative, the teacher would be able to devote much of her personal attention during the reading practice period to individual children who needed special help. Again, the use of students to monitor the practice of other students would increase the availability of practice opportunities in large classes.

c. In the third grade, a class could be divided into pairs to practice spelling. Each member of the pair would have a list of words to read aloud, one at a time, to the other member. The reader would check each word written by the writer and correct it as necessary, using the list in his hand (see Rosenbaum's approach). The two students would take turns being reader and writer. The same general system, at this and other grades, could be used for a variety of lesson content where the answer was definitive and needed little, if any, judgment to determine the correctness of a response. Some examples are sentence punctuation, arithmetic problems, science or geography identification and historical facts. This use of students as teaching resources generally would employ the same kinds of problems normally assigned as "seat work", but would permit far more frequent practice since the teacher no longer would have to grade every paper personally. There also would be the additional benefit to each child of more immediate assessment and correction of each response.

d. In the fourth or later grades, children learning composition could be asked to read their stories or themes to another student before turning them in. This would permit the students to get help in identifying weak or illogical sections and, if the written paper also was reviewed by the partner, would make it possible to catch errors in spelling, grammar and punctuation. The detection of errors by a sympathetic classmate, as well as the personalized identification and discussion of errors prior to formal submission, ought to make these sessions extremely worthwhile. The approach also would permit the teacher to utilize practice more than would be tolerable when large classes were involved. In the same way, the British tutorial practice of having a learner summarize his reading to an attentive listener could be used for the upper grades of primary school. In the British system, the listener is not expected to have read the source materials himself, but only to consider the clarity and organization of what is presented to him.

These various systems involving In-Class Cooperation are predicated on several basic assumptions. One of these is that practice indeed has considerable educational value and that teacher-based practice opportunities are now heavily depent on class size. A second is that there is sufficient specificity in instructional content, at least at the primary level, to expect classmates to be able to judge the correctness of each other's responses with acceptable accuracy. The answer must be one which does not depend on advanced knowledge or mature judgment for its assessment. For this reason, it is not likely that in-class tutoring could be applied equally successfully to all content areas, even if various imaginative approaches were identified. Class sizes still could not be expanded past the point where the teacher was effective as the presenter of new information, as class disciplinarian, or as the interpreter of complex academic and social principles. Such problems might be remedied by still other changes in combination with in-class cooperative tutoring programs, such as the adoption of team teaching, but these solutions go beyond the scope of this survey.

In spite of these difficulties, however, In-Class Cooperation has several distinct advantages. First, it does provide some limited, but nevertheless quite useful, remedies for the most outstanding deficiencies created by overly large classes. Second, it is capable of creating a "helping" environment in school which, if supported and encouraged, may yield more useful and sensitive graduates as well as specific educational gains for both the better and poorer students. Third, because the approach is designed to work within the classroom, no special administrative or supervisory problems are anticipated. It would be unnecessary to reorganize classes, prepare much in the way of new or specialized materials, or emphasize the training of tutors. These particular advantages may be especially promising for those locations where education already is heavily dependent on television or radio broadcasts directed to the classrooms, and it is the amount of practice rather than what the learners are exposed to that limits educational attainment.

Model II: Cross-Grade Turoring

This is the most frequently cited use of students as teaching resources in the United States, and is the approach at the core of the programs described by Gartner, Kohler and Riessman, by the Lippitts, and by Melaragno. Because the tutors are older and presumably more knowledgeable than the tutees, their role can be more formalized and actively instructional than it would be in an In-Grade Cooperation program. Several useful attributes generally can be assumed to be present in the older students which would enhance their potential as tutors. First, they already have mastered the skill or knowledge to be taught and, if it is appropriate to do so, can demonstrate the desired outcome to the learners. This aspect of tutorial instruction can be very important when teaching on a one-to-one or one-to-small-group basis since the demonstration can be tailored to individual weaknesses or repeated as often as needed, neither of which is plausible in a large class setting. Second, the older child is more likely to be aware of the difficulties a learner might experience, since he is not so far removed from that learning challenge himself to be insensitive to subtle barriers in the way that an adult teacher might be. Third, the older child is likely to be more patient, tolerant and accepting of modest gains than a trained teacher who often will view any one lesson as only a step toward a longer range goal. Fourth, the younger child may respond more openly and freely to another child than he would to an adult. This characteristic may be particularly important in many of the developing countries where the social distance between pupil and teacher can be greater than it is in the United States. Their nearness in ages and sizes also can make the older child a more suitable model for the younger one in terms of their deportment, expectations and intimacy of communications. And, fifth, the older child in most developing countries is more likely than the teacher to use the most easily understood vernacular, to choose and make use of locally significant examples where the need arises, and to be familiar with the younger child's background because of shared kinship and sub-group memberships.

Several other components of effective tutoring could be taught to the older children or arranged through the use of specialized supporting materials. So long as they can be presumed to be able to read and follow directions, older children might well be able to guide the development of fairly complicated learning, and even help younger children with a skill that they themselves do not have. Four potentially useful components should prove particularly helpful and be well within what could be accomplished by a modest amount of training or the addition of only a small array of new supporting materials. First, criterion judgment is an important skill in tutorial instruction, and it may be easier to teach this skill than the mastery of the underlying behavior itself. A child struggling to learn English needs a listener who can determine whether his utterances are intelligible or not as much as he needs a model to imitate. He needs someone to tell him if his handwriting is legible, if his subtraction is correct, if his hands are clean enough, and if his summation of a passage is meaningful. Second, lesson organization is apt to be a particular weakness when children teach children, but this deficiency can be overcome either with adequate training or, more directly, with a prearranged lesson plan. Such a plan might include, in addition to the sequence of demonstrations and exercises to be followed, suggestions as to what kinds of errors to be alert to, what to do when an error occurs, and what kinds of responses specifically ought to be praised. Third, record keeping is a function that could be taught or accomplished by designing the instruction around the necessary record sheets. Keeping adequate records may not be too critical in determining how much the tutee learns, but it may be essential to maintaining the interest and participation of the tutor. And, fourth, personal responsibility for the preparation of tutorial materials may be the most important component in determining the growth of the tutor's own capabilities. While certainly one of the most difficult of the skills the tutor could be expected to master, it also is the one most likely to give him the kinds of educational gains that occasionally have been reported for the tutors in tutorial relationships.

The operation of this model would depend on an adequate supply of older students to serve as tutors, some realistic method for rewarding the tutors for their services, and a scheme for making maximum use of their efforts in terms of needed improvements. In each of these three respects, a Cross-Grade Tutoring program would have to be designed to fit into the existing schedule, teaching approach and available space in the schools of that particular country. Perhaps the best model would be the one most often used informally in the United States. Harrison (1971) reports an Office of Economic Opportunity survey conducted in the Spring of 1967 which identified 369 tutorial projects than in progress. The vast majority of these used older students to tutor younger students on a one-to-one basis, and in most cases, the learners were disadvantaged children in need of extra assistance. The supply of tutors would consist of volunteers among the upper grade children attending the same elementary school. Their rewards would be derived from steps taken to insure their participation would result in academic gains for themselves, in increased social skills and confidence and in adequate community recognition. Their responsibilities would be to provide remedial instruction to those children in the lower grades who needed added help.

Because of space and scheduling problems, the program probably would be least difficult to organize if the tutorial sessions were held immediately before or immediately after normal school hours. Tutees should be identified in terms of the kind and amount of assistance they need, so that they can be matched with tutors who have the corresponding skills and time to devote to the program. Because the potential number of older students who are expected to volunteer will be less than that which might well be used, it would be wiser to indiscriminately enlist the help of all those who are willing to assist rather than attempt to select among them. Under these conditions, both a well prepared training program and direct support in the form of teaching materials which could be used by those who did not have the capacity or the free time to develop their own would be essential. These components would insure the maximum possible participation by older students, the greatest gains for the learners, and the continued enthusiasm of the teachers and parents.

The advantages of this design for a program of Cross-Grade Tutoring are its flexibility in terms of how extensively it would need to be adopted by any given school, its independence from problems brought about by curriculum changes, participant absences or modifications in teaching approaches, its minimal interference with regular school routines, and its emphasis on the individual assistance so frequently missing in large classes. Hopefully, the training program would make possible the development of the kinds of helping relationships aimed for by Melaragno and the Lippitts in their work, and result in the same pattern of successive gains that were reported in Pocoima and at the Soto Street School in Los Angeles. It would be imperative, however, that the training program be very carefully designed to permit these outcomes, and that efforts were made to insure that the training was properly given and then not undone by misdirection from the local school's teaching staff.

Model III: Monitorial Instruction

The use of students to lead group-based instruction, as was characteristic of Lancaster's system, is appropriate to overcome the deficits typical of three specific instructional situations. First, the use of monitors can counteract the frustrations usually associated with unreasonably large classes. A teacher would be able to divide the class arbitrarily into convenience groups, and assign monitors to lead one or more of the groups in drills or seatwork exercises while she directed her attention to the more manageable number of children in just one group. Second, the creation of a monitorial system might lead to the more constructive use of student time, and a reduction in the amount of time the teacher had to spend on preparation, in shared-teacher schools. Monitors could be made responsible for children in other grade levels while the teacher focused her attention on each grade in turn. Third, a monitorial program could be used not only to deal with, but to make possible the creation of, ability groupings within classrooms. Monitors could maintain discipline and even lead practice activities for the children in one track while the teacher was working with the children who were in a different track.

A program of Monitorial Instruction cannot be considered an effective solution for a void of teachers, however. Even in Lancaster's system, only a few fundamental skills were taught, and it would be a stretch of credibility to imagine an entire elementary curriculum of today being taught by a squad of monitors all under the supervision of a single adult educator. To function at all well, such a system would depend on a vast array of lesson plans and instructional materials, as well as on training for the monitors which came close to being as extensive as that now being received by many teacher candidates in the developing countries. Furthermore, the system necessarily would depend on reasonable longevity among the monitors to prevent the eventual collapse of the system as happened in Lancaster's time. This might be possible if para-professionals or other adults were recruited to fill the monitorial posts, but not if the staff was comprised of bright children who themselves would want to pursue their own education and a remunerative career.

The potential difficulty with Monitorial Instruction is not so much how to get the program to work, but rather how to get it to work effectively. Fairly little imagination is required to assign an older or brighter child the responsibility of maintaining discipline among a group of his peers, particularly when the teacher is apt to be only a few steps away. Considerably greater planning may be required to determine what other functions normally the responsibility of the teacher could be assumed by the monitor, and to make it highly probably that the monitor will carry out these functions successfully. The danger in designing a monitorial system is much less likely to be in an overdependence on the monitor's capabilities than it is that he will be underused for roles he is perfectly capable of filling. To make a monitorial program as productive as it could be, it is necessary to identify every instructional function that could be performed by a monitor without extensive training so that he becomes an important asset in the classroom. It is clear, for instance, that a professional teacher is not needed to present a drill, read a story, supervise an exercise, or show a film. And it probably is true, in addition, that the professional teacher's time is largely wasted in demonstrating the solution to problems, checking most homework assignments, presenting straightforward facts or listening to reading recitations. The principal areas in which the skills of a trained teacher are required are in organizing lesson content, in interacting with students when mature judgment is required to assess the correctness and consequences of a student's response, and in diagnosing individual learning difficulties so that the proper remedial instruction can be prescribed to overcome the problem. The goal of a monitorial program should be to create the maximum possible opportunity for the professional teacher to do what she has been given the specialized skill and knowledge to do.

Although the details of this kind of program would take considerable effort to develop, the results may be a substantial improvement in the utilization of scarce teaching resources. No gains could be expected, of course, if the teacher was unwilling or unable to reserve the more difficult instructional tasks for herself and allow student monitors to accomplish all those which were less demanding. It is unfortunate in Henkin's program, for example, that the teacher stands by as an observer while the older student conducts the class. Although he is convinced that the class will learn more than they would if their regular teacher taught every day, the appropriateness of this model for use overseas would be enhanced considerably if the teacher could utilize that time to accomplish something, like individual tutoring for the very slowest learners, that otherwise could not have been done. Nevertheless, Henkin's results are expected to show that students at least can alternate with a professional teacher in taking full responsibility for a class, and that they may be even more effective than the teacher under certain circumstances.

In operation, a Monitorial Instruction program could depend on students in the upper grades to teach their peers, but children in the first few grades probably would need help from older students if they were to get anything out of the instruction. This could produce scheduling problems, but it may be possible to offset the schedules of the upper and lower classes so that the student doing the teaching did not have to miss any of his own classwork. It also may be possible for several older children to share the teaching responsibilities and the associated demands on their free time for lesson preparation. However, taking turns would prevent the monitors from becoming acquainted with the individual talents and limitations of each child in the group being taught. This would make their instruction largely automatic and less effective than it could be. Within the upper grades, the simplest design would be for the teacher to assign monitorial duties to the oldest and brightest children. With energetic planning, on the other hand, it might be possible for all of the students in the class to take turns. Each would be assigned the kinds of monitorial functions that were well within his capabilities. Because the children were members of the class they were teaching, they would have an ongoing familiarity with each of the other children, would know exactly what the class already had covered in previous lessons, and would be able to emphasize what was felt to be important by their own teacher.

Another planning aspect of a monitorial program would be the need to consider the trade-off between gains for the learners and gains for those given teaching responsibilities. Quite probably, the more the preparation and presentation of the lesson depended on the monitor, the more he would learn. On the other hand, that lesson may not be as advantageous for the learners as one prepared by someone with more training, experience and knowledge. The degree of predetermined structure which was optimally beneficial to the achievement of all of the students in the class, particularly when the monitorial format was one in which every student participated in turn, would be an interesting research problem. Whether structured or not, some supporting materials would have to be furnished to the classroom. Students who were expected to prepare lesson material would need source books, models and other aids to give them the content and exercise ideas they would need to have. Students who were expected only to oversee a lesson might be furnished with worksheets, tape recorded lectures and detailed guides for what to say and write on the chalkboard.

Model IV: Ancillary Teaching

In this model, students are used to provide instruction to other children outside the regular school framework. This was the approach used in Chicago, as described by Janowitz, and the one often followed in the "storefront" schools established in many ghetto areas. The aim of such a program could be to create educational opportunities for children who did not have access to school, for children who had access to school but did not attend because of poverty or unavoidable responsibilities which kept them at home, or for children who attended school but were not receiving all of the instruction they could profit from. In all of these instances, the amount of responsibility placed on the tutors may be more than can be assumed by an older primary school child, and the success of a program of this kind may hinge on using secondary or university students, para-professionals or other adults. On the other hand, a younger student may have better rapport with other children, and be able to gain acceptance for informal education from those who reject formal education. In addition, a student would have continuous access to his own teacher as a resource in planning lessons, choosing materials and overcoming problems. Either way, the instruction might best be targeted at rather narrow and specific objectives than be an attempt to replicate a full educational program.

The design of an Ancillary Teaching program would depend to a large extent on which aim was selected as the focus of the program. For this reason, sub-models reflecting each aim should be considered separately to examine the details of their operation.

a. A program which was directed at children who did not have access to school most probably would emphasize fundamental academic skills such as reading, writing and arithmetic if it was designed around teaching resources who themselves were elementary school students. Many children probably are not in school, although they would like to be, because of the absence of a nearby upper primary or middle school, but teaching the content appropriate to these levels well may be beyond the ability of almost all fourth and fifth graders. An older child might be attending primary school, on the other hand, while younger children in his village did not because of the considerable distance to the nearest school or because they were denied places due to overcrowding. Teaching fundamental skills to these out-of-school children would most efficiently be based around some highly structured program that was not teacher dependent, such as Harrison's or, better yet, Ellson's, which permits group teaching and does not require materials for each student. One additional advantage of Ellson's approach is that the lessons are highly modularized so that instruction need not occur regularly, and two or more tutors could alternate as instructors.

b. A program which focused on children not in school because of poverty or responsibilities at home might be very similar to the one just described. It also might be possible, however, for the helping students to present an abbreviated version of their own classroom experiences to neighbor children who had dropped out of school for one reason or another. In this kind of program, the enrolled student could base his instruction on his own textbooks and class exercises. He could follow the same lesson plan followed by his own teacher, imitate her teaching methods, and re-present new content he has learned that day while it was still fresh in his mind.

c. A variety of programs could be instituted for children who were in school but were not learning as much as they could learn. One possibility would be to ask brighter or older children to help students who were falling behind in their studies. The operation of this program would be very similar to an afterschool program that utilizes cross-age tutors but, in this case, the instruction would not be coordinated through the schools. Another possibility would be to establish an enrichment program that offered subjects not included in the syllabus of most schools, that permitted bright younger children to accelerate their learning, or that consisted of instruction in vocational and other areas which the regular classroom teacher did not have the skill to teach.

d. Finally, it might be possible to create an Ancillary Teaching program that focused on preschool aged children. Rather than stressing content, such programs could emphasize both the readiness skills and the social behaviors that would facilitate learning the following year in the first grade. An advantage to this program is that it could be quite informal, and almost wholly independent of instructional materials. Some training of the tutors would be required, particularly if sophisticated techniques such as contingency management were used, but this kind of training could be incorporated into the regular school program. Considering the fairly brief length of class sessions appropriate for preschool children, a program of this sort would not represent much of a burden to the students given the responsibility of leading these classes.

There undoubtedly are still other beneficial applications of Ancillary Teaching that could be developed to meet particular needs. For example, instruction could be offered to the handicapped or retarded, to children needing temporary assistance because of having moved into a new language area, or as a means of helping peers keep up with their schoolwork despite a period of illness. It even would be possible to give school students the task of teaching adults to read in areas where adult illiteracy was high. As noted earlier, however, most of these porgrams would depend on more sophistication and greater motivation than reasonably can be expected of typical primary school students.

Summary

Students are a largely underutilized instructional resource, and yet there are many roles they could fill which could expand existing educational opportunities in the developing countries. Using them to teach other children could result in wide variety of benefits, depending on the model that was adopted and how this model was designed. Four separate models, or groups of models, can be identified which make use of students as teaching resources. These are not the only models which could be devised, but they do represent modal points in the spectrum of conceivable programs that might be of value to underdeveloped nations. These four models are:

I. *In-Class Cooperation*, a model which pairs or groups children within the same class to permit increased opportunities for students to practice newly learned skills. By working together, they can get more practice than otherwise would be possible, particularly in very large classes. The approach also potentially frees some of the time a teacher now spends in conducting recitations or supervising exercises for other more important activities, such as giving individualized help to learners with difficulties.

II. *Cross-Grade Tutoring*, a model which utilizes older, more advanced students to give individual tutorial help on a one-to-one basis to younger students who needed extra assistance. To promote the possibility of gains for both the tutors and the tutees, the program should stress voluntary participation, tutor training, and the preparation of only a limited supply of special materials.

III. *Monitorial Instruction*, a model which uses students, preferably brighter students from the same class, to carry out some of a teacher's normal instructional functions. This approach would be particularly useful where the class was made up of separate grades, ability streams or convenience groups. It would permit the teacher to spend a greater proportion of her time on those activities which only she, as a professional, had the skill and knowledge to accomplish successfully.

IV. Ancillary Teaching, a model which depends on students enrolled in school to assist and instruct other children where no schools are available, where there are children who cannot attend school, where children in school need extra help, or where classes for preschoolers are desired. This kind of program would stress instruction aimed toward specific skills rather than the comprehensive education of the learners.

In each of these four models there are opportunities to produce demonstrable academic gains for the helper, for the learner, or both. Each model also affords the opportunity to create lasting patterns of social relationships that could lead to positive improvements in community and cultural interactions. None of the models entail major revisions in existing educational systems, extensive material development efforts or substantial operating costs. For these reasons, these four models were selected as the ones to be presented to educators in the developing countries for their consideration and comments.

V. FIELD SURVEYS IN DEVELOPING COUNTRIES

To determine the suitability and workability of using students as teaching resources to enhance educational opportunity in the developing countries, brief field visits were made to West Africa, South Asia and North Asia. Plans had been made to visit portions of Latin America as well, but difficulties in scheduling interviews with suitable, research-oriented educators prevented this portion of the survey. In each region visited, both the status and problems of primary education and the potential utility of each of the models were examined rather closely for one country, and then further information was obtained on additional countries within the region whenever possible. In this way, rather extensive interviews, and visits to both urban and rural schools, were accomplished for Ghana, South Viet Nam and the Republic of Korea. Additional information was assembled on Sierra Leone and Nigeria in West Africa and on Thailand, Indonesia and the Philippines in South Asia.

Although every effort was made to secure data, opinions and descriptions that are as accurate as possible, only a few informants, and sometimes just one, generally were relied upon for the information concerning each country. It should be apparent, then, that the personal recollections and inclinations of the informants, together with the general problem of the accurateness of fundamental educational data in any of the developing countries, most likely has created some distortion in what is reported in this section. As noted in the Acknowledgments at the beginning of this report, on the other hand, the informants whose assistance was sought all were native to the country they reported on, almost all were educators experienced both at the classroom and administrative or supervisory levels, and most were trained in the objectivity of educational research usually in advanced degree programs at U. S. institutions. The need for more detailed, accurate and comprehensive information concerning education in the developing countries, particularly at the classroom level, will be apparent from these reports, and it is hoped that those who could contribute to such a goal will do so.

Each of the following reports is divided into two parts. The first part concerns the status and problems of education, particularly at the primary level, in each of the countries surveyed. Information, where available, is given on enrollment, school composition, teaching methods, recognized problems, class size, teacher salaries and types of primary schools likely to be found in various localities throughout the country. The second part of each report briefly considers the responses elicited to each of the four models described in the previous section of this report and then, whenever appropriate, further examines the detailed design and probably implications of one of the models selected by the informants as seemingly the most useful and interesting for their country. Finally, there is a note concluding this part on the most appropriate local institutions that could cooperate on research to test the use of students as teaching resources and could provide an imputus to the wider use of those techniques that were demonstrated to be beneficial.

The interviews themselves varied in length from a few hours to several days of questioning and discussions. The informants, together with various teachers, headmasters, educators and even students who were approached during the field visits, were extremely helpful and frank about the issues that concerned them and their country. Whenever appropriate, the purpose of the information gathering was explained. It was always noted, in these explanations, that the specific countries selected for the survey did not necessarily represent those where any future research on the use of students as teaching resources might be conducted. Instead, it was pointed out that the intent of this survey was to identify those conditions and circumstances which should influence the selection of one of the models for further study and then were likely to affect the outcome of such a study in terms of the practical benefits that would result. In other words, the aim of the survey was not to determine whether peer tutoring should be pursued in any of the countries visited, but to establish the potential of this approach as a remedy for educational deficits in any developing country. As will be seen, it is probably the case that students could be used as teaching resources almost anywhere but, before such a study or undertaking is planned for any particular country, it would be extremely advisable to determine which model would be most appropriate for that country using the same general approach that was followed in these interviews.

A. Ghana

Educational Programs and Problems

The school program in Ghana is based on the British system. There are six years of primary school. Near the end of the sixth year, students wishing to go on to secondary school take the highly competitive Common Entrance Examination. Those who pass begin a five year secondary program leading to an O-Level (Ordinary) certificate, which can be extended by two additional years to meet the requirements of the A-Level (Advanced) certificate generally required for university entrance. Students who do not elect to take the CEE, or who do not pass it, are expected to continue on to a four-year middle school program. Those who want to may take the CEE near the end of each of the four years of middle school and, if successful, then begin secondary school. Only a very small proportion of students at the secondary level attend technical or commercial schools.

The results of the Common Entrance Examination are highly important to most Ghanian children and their families, particularly for children whose parents are in the civil service or have white collar, professional or mercantile occupations. For this reason, there is considerable concern over the quality of the teacher assigned to the last year of primary school and his reputation for successfully preparing students for the CEE. The practice of rushing through or even abandoning the approved syllabus for this year, and devoting all available time to coaching pupils on mathematics and English, the two principal content areas included in the CEE, is both typical and expected in spite of instructions from the Ministry to the contrary.

The middle schools also are under pressure to prepare students for the CEE, and those students who do not stand much chance of passing tend to drop out before completing the four years of middle school. Only recently a new program called "continuation" schools has been initiated as a substitute for the last two years of middle school to focus on employable skills for those not likely to enter secondary school. Because of a current emphasis on the middle schools, new buildings are being constructed for this purpose and even some former primary schools are being converted to middle schools where populaltion shifts permit. The Government Education Act of 1961 mandates compulsory school attendance for ten years but this is widely regarded as more of a commitment on the part of the government to make the necessary openings available, particularly at the middle school level, than as an intention to enforce school enrollment strictly.

Government statistics for 1971-72* report that some 960,000 students were enrolled in primary schools, which is estimated to be approximately 63 percent of the age-eligible population. Calculations of the percent enrollment by year indicate a range from about 85 percent in the first year (P-1) to roughly 53 percent in each P-5 and P-6. Virtually all primary graduates enter either secondary or middle schools; some 10 percent ultimately begin secondary school, including those who have spent one or more years in middle school. Approximately 68 percent of primary graduates complete middle school and another 7 percent complete secondary school, which means that about 40 percent of all children finish at least ten years of education. The greatest rates of dropout occur during the primary years. The main causes seem to be the preference by rural parents to keep children at home where they are available for farming and household duties, the general lack of interest in formal education among the Muslim population, especially for girls, and the age discomfort felt by some rural students who did not begin school until 8 or 9 years of age. These students were felt to be too young at age 6 to walk to school and back, particularly when the distance involved was several miles, and their parents kept them at home until they were old enough to travel safely.

In spite of the enrollment data, it is contended that sufficient places are available, in both the primary and middle schools, to permit everyone to attend who wants to do so. There are at least 3 years of primary school available within tolerable walking distance of all but a few, isolated homes. Overcrowding is typical of the major urban areas, where almost all children regularly attend school, but not of the schools in rural and remote sections of the country. The shortage of teachers, which once was a major concern, rapidly is being alleviated. At the present time, roughly 80 percent of the primary teachers are qualified, having completed either a four-year post-middle school teacher training program or a newer, two-year post-secondary (O-Level) program. The remarkable strides of the last few years to upgrade teachers must be noted. Only about 40 percent were qualified in the 1967-68 school year, yet the number of unqualified teachers is expected to reach zero by the end of 1975. At the present time, applicants to the post-middle school program are being reduced and it is expected that these institutions will be closed entirely in another year. All teacher candidates from that point on will be secondary graduates who enroll in post-secondary training. In terms of opportunity, the real shortage in Ghana is in the facilities and teachers available for secondary education. Spaces exist for only one sixth of those who take the Common Entrance Examination.

---

* Ministry of Education, Ghana. Digest of Educational Statistics - 1971-72

Teachers in the rather authoritarian Ghanian culture tend to be respected because of their position. Prior to Independence in 1957, teacher recruits tended to be exceptional in quality both because of limited competitive opportunities and because teacher training usually was the responsibility of mission schools which included a year of bible study in teacher preparation. This led to consecration as a minor minister of the church which, in turn, provided additional income and prestige through the village community and, in some cases, the opportunity for full ordainment. Following Independence, the Government's emphasis on education led to vast increases in the number of teachers, the transfer of mission schools to government control and the lowering of fees to secondary school. These changes, in turn, tended to relax the standards applied to teacher training applicants, reduce the relative income of teachers in comparison with other positions in the civil service or in the private sector, and lower the esteem held for teachers within the local community.

The better qualified and, more significantly, the more experienced teachers now tend to be found in urban areas where the pay scale is the same as in rural areas but where the amenities and quality of life are far better than they are in the countryside. Newer teachers are unable to secure positions in the metropolitan areas and therefore have been taking teaching posts in the smaller villages and more remote areas in ever increasing numbers. Teachers throughout Ghana are expected to be authoritative as well as authoritarian; every word the teacher says is considered significant. Students seldom challenge or question a teacher and, except for those few parents who have attended a university, the community as a whole looks upon a teacher as competent and knowledgeable. Both men and women teach in the elementary schools, although male teachers outnumber females by about two to one.

The present pay scale for qualified teachers is in the neighborhood of 800 cedis per year ($700.00 U.S.). Completely untrained teachers, called "pupil teachers" by the Ministry, are selected from among the middle-school graduate applicants to teacher-training institutions. Currently, they are permitted to teach only three years while they await acceptance to a teacher training institution. During this time, they make 384 cedis per year ($340.00 U.S.). By way of comparisons, an office secretary earns approximately 1600 cedis ($1,400.00 U.S.), an unskilled workman would receive the minimum wage of 1 cedi (90 cents u.s.) per day, and a youth would expect a tip of 30 peswas (26 cents U.S.) for an errand. Approximately 25 per cent of Ghana's budget is earmarked for education.

Teachers vary considerably in competence, and this variation is heightened by the availability of supervision, reference texts and audiovisual equipment in the urban areas in contrast to the more rural areas. The least qualified teachers have not had practice teaching experience and tend to do no more than present the scheduled content to the class; some simply read the text aloud. These poorly prepared teachers often use more seat-work activities than other teachers, perhaps to give the children something to do, but their use of this time is poorly planned and not particularly constructive.

There are four characteristic types of primary schools in Ghana. These are the urban public schools typical of Accra or Kumasi, the village schools to be seen throughout most of the country, the remote-area schools found in the mountainous Northern District, and the so-called "special" schools in the wealthier areas of metropolitan centers. Of the children attending primary school, about 20 percent attend urban schools, 72 percent are enrolled in village schools, 7 percent attend remote-area schools, and the remaining 1 percent go to special schools.

The curriculum in all Ghanian primary schools consists of English, the regional vernacular (which may not be the language spoken in the child's home), mathematics, music, art, social studies, religious knowledge, physical education, science, hygiene and handcrafts. In most schools, classes meet for ten or eleven 30-minute periods, or five to five and a half hours per day. School is in session five days per week for 42 weeks during the year. As noted earlier, English and mathematics are emphasized. Children have the same teacher throughout the day, who teaches all subject. Ability grouping is up to the teacher; some do and some do not divide their classes. Up to four ability groups may be formed within a class. Every effort is made, however, to eliminate ability groups by the sixth year to assure parents that all children are exposed to precisely the same information as they prepare for their CEE's. The regional vernacular tends to be used as the medium of instruction in the first few years, particularly in village and remote-area schools. English is used as the medium of instruction in the later primary grades and also in the earlier grades in certain urban areas, particularly in the "special" schools.

A typical urban primary school consists of six classrooms, one for each primary grade. There normally are 35 to 45 children per class. These children will be homogeneous in age in the wealthier sections but spread as much as three years in the poorer neighborhoods due to late starters and repeaters. Classroom methods emphasize lecture, drill, seat work and recitation. Most teachers try to give students who need help some individual attention during "expression time" or seat-work periods, but very little time is available considering the number of children involved and the range of subjects covered. Children tend to enjoy school but they are under considerable pressure to do well. They register keen disappointment over a poor test score or course grade. About one hour of homework is assigned during the primary years per night. Parents, if they can, will help children with their homework and ordinarily will follow their childrens' progress in school very carefully. Because of rivalry, children are not likely to help each other with school assignments even if they regularly play together. Providing erroneous information to a classmate in the fifth and sixth years in hopes of gaining an edge on the CEE would not be unexpected. Many urban schools operate on a shift basis, with one group of students and teachers using the classrooms in the morning and a completely different group using them in the afternoon. These classes meet four to four and a half hours per day, or about one hour per day less than classes in non-shift schools.

An ordinary village school also consists of six classrooms although a few offer only lower primary instruction (the first three years), and some will be housed in thatched shelters rather than more permanent structures. Many of the teachers at these schools will operate small farms or shops to supplement their incomes. Classes tend to be smaller than in urban areas with 25 to 35 students per class. Some children must walk considerable distances to school, perhaps three or four miles. This, coupled with the Ghanian practice of allowing children to stay up into the night, means that many children arrive late. Beacuse the percentage of students from village schools who apply to take the CEE is fairly low, there is somewhat less emphasis on the examination in these schools, although teachers still try to make sure their own students are well enough prepared to pass. Perhaps the greatest difference between urban and village schools is the country child's lack of familiarity with books and other written materials, with spoken English, and with the urbane topics covered in school that often are far beyond his experience and comprehension. Teachers tend to be less experienced and, often, supervision is scarce, electricity absent and supplies missing. Nevertheless, the village teacher is more likely to feel part of his community and consequently be more motivated toward his responsibilities. Parental participation in the educational process is likely to be poor. Most parents themselves are uneducated, many feel the children are needed at home to help with chores and crops, and a few are concerned that education is likely to turn the children away from home and toward the cities.

The remote-area primary schools characteristically operate on a "shared-teacher" basis where two to four teachers are responsible for all six years of primary school. Different grades are covered in the same classroom, such as grades 1-3 by one teacher and grades 4-6 by the other. However, every effort is made to give special attention to first year students, who are learning to read, and fourth year students, who have just begun to use English as the medium of instruction. For this reason, grades 2 and 3 and grades 5 and 6 are sometimes combines, with the contents of each grade distributed over two years of study, but grades 1 and 4 are almost always taught separately. The teacher might spend half an hour with the first grade, for example, and then assign them "expression work" while presenting a lesson to the combined group of second and third graders. Each teacher in a remote-area school will be responsible for a total of 15 to 25 pupils spread over two to three grades. The entire school will have two or three teachers and perhaps 40 to 60 students. Because of class sizes and the mixture of grades, teachers tend to lecture less and emphasize "expression work" more in the rural areas than in the cities. Children in remote areas may have to walk as far as five miles to reach the nearest school.

There are three kinds of special primary schools, all found only in the major metropolitan areas: private preparatory schools, government "experimental" schools, and the "international" schools which cater mainly to foreign residents and the more cosmopolitan Ghanians. These schools are staffed by highly qualified teachers who are paid more than the normal classroom teacher. There are only 15 to 20 students per teacher and generally several classes per grade level which facilitates ability grouping and special attention. The medium of instruction is English from the beginning of first grade. Supervision is very close and thorough, the children are experienced with books, and often have attended kindergarten before entering school. A major difference between the special schools and other urban schools is that classes only meet four hours per day. Perhaps to make up for this, three to four hours of homework are assigned each day. These schools tend to use modern teaching methods and a variety of audiovisual materials. Their placement success on the CEE is much higher than for other schools.

Supplemental, private classes for both upper primary and middle school students on the subjects covered by the Common Entrance Examination are fairly widespread during the three or four months preceding the CEE. These classes usually are staffed by regular teachers and, despite government objections, generally are held at the regular schools. These special classes, for which parents pay about 2 cedis ($1.80 U.S.) per month, generally meet about 2 hours per day. These coaching classes tend to average 10 to 15 students each, although teachers with excellent reputations for having produced a high percentage of successful students may have groups of one hundred or more pupils.

The main problems reported with respect to primary education in Ghana concerned the curriculum, teaching materials, classroom facilities and teacher training. The first issue is that the primary education currently being offered is not relevant either to available opportunities or to the backgrounds of most children. Most of primary education is directed at preparing students to enter secondary school but there are so few places available that, for the remaining children, much of this education is pointless. On the other hand, the educational system is not now providing children with employable skills or with the knowledge they need to become better consumers, family members or contributors to their communities. The education being offered fails to reflect the rural child's lack of contact with books and worldly ideas. It encourages him to leave the farms where his efforts are needed, and migrate to the cities where employment is difficult to find.

The second problem is with the availability of classroom teaching materials and their quality. Textbooks, in particular, tend to emphasize fact rather than understanding and they fail to help in the teaching process by not offering the explanations that are needed to make self-learning possible. The third problem is that most classrooms are illequipped, badly furnished, overcrowded and too often offer neither adequate light nor isolation from the noise of other classes to permit the efficient use of class time. The fourth problem is that teacher training, as most of the education in Ghana, suffers from the too indiscriminate adoption of foreign content. The approaches, methods and principles taught to teacher candidates do not reflect the problems and needs that characterize Ghanian education.

Students as Teaching Resources

The Ghanian attitude of preferring authoritative sources during learning is likely to affect any use of peers as instructional resources. Peers are not respected, nor would children be expected to assume teaching roles. Playing "school" is not at all common. Also, children are not likely to cooperate with each other on their schoolwork, particularly in the year or two before exams. On the other hand, students will work very hard at school-related assignments and responsibilities. A child would feel he had disgraced himself by not being fully prepared. Thus, it might be more difficult to get the learner and his parents to accept another student in a teaching role than it would be to get the teaching student to do what was wanted of him. The present stress on the CEE nevertheless may prevent students from assuming teaching responsibilities they actually could handle. Everyone would want their child to have a "real" teacher so as not to affect his future.

In spite of these problems, monitorial teaching programs may be better suited to Ghana than other models. A program based on in-class cooperation would involve very substantial changes from the way children presently are being taught. New materials would be required, and the teachers would have to be given considerable training before they could make such a program work. Now, teachers are oriented toward lectures and individual seatwork and they would be reluctant to try anything new. Asking older children to help younger ones in a cross-grade tutorial program would be resented by the older children, particularly in the sixth year, because it would take time away from their own studies or, worse yet, cause them to miss some of their own school day. Students might be more willing to give up their class periods in physical education, games or agriculture because they feel these subject are unnecessary, but the Ministry feels they are important and that every child should take them. Even if they were not felt to be essential, older students would rather have another hour of lessons from their teacher, or another free hour to study, than spend the time helping younger children learn. Furthermore, even if the tutoring done by older children was very good, the younger children still would think a regular teacher is better qualified to instruct them. Yet another problem is that space is very scarce because the classrooms already are overcrowded and there would be no room to add tutors without adding new facilities. A program of ancillary instruction might be very helpful in rural and remote areas, where an older child could be paid to help younger children with their homework or give them coaching for the CEE in their own village in the evening. However, there already is a program of one year of national service for all university graduates before they are permitted to apply for civil service or many commercial positions. Many of them spend this year in teaching and other services for the smaller villages.

In designing a monitorial program for Ghana, it would be appropriate to have the students take turns preparing and presenting lessons or exercises if the teacher was able to listen in during the class period to make sure there were no errors. Teachers would like this approach because it would reduce their preparation time, but many parents would feel their children were being asked to do a job that the teacher is being paid to do, even if it were demonstrated that these activities produced significant gains in their child's learning. Students who taught their classmates also could be expected to gain in self-confidence. One problem that would have to be overcome, however, is that the students would tend to prepare the same kinds

BEST COPY AVAILABLE

of lessons presented by their teachers. Alternatively, an even better design would be one which increased the amount of time the teacher could devote to giving students individual attention. Students could be chosen to lead their classmates in arithmetic exercises, spelling dictation or practice in sentence construction and this would free some of teacher's time to work with those students who were having special problems. Whether typical teachers could learn how to give individual help would be a question, however.

A monitorial system would work particularly well in the shared-teacher schools and, perhaps, in schools where the teachers divide their classes into ability groups. Even in these situations, however, it is not likely that this method necessarily would improve the learning of those children receiving the instruction, so it would be important to design the program so that at least those doing the teaching would get the most out of it. Thus, it would be necessary to supply extra source materials to the schools enabling the students preparing the lessons to have something to work from. This approach also could encounter problems, because it would be important for all students in the class to share equally in the task of preparing lessons so they could share equally in the opportunity to learn more that way. Special provisions would have to be made for the poorer students, perhaps by having the teacher assist them, so what they presented was correct and so that they would not be disgraced in front of their classmates.

The best use of an ancillary teaching program would be to ask students attending school in the remote areas to teach pre-reading skills to younger children kept at home by their parents because of the distance they would have to walk to the nearest school. If they could start their education at their homes, they would not be so far behind when they finally did start going to school, and perhaps they would remain in school longer as well as achieve more before they quit school. Students already in school would certainly volunteer to do this, but they would need help from their own teachers to know what to do, and they would have to be given materials to use. In this program, there should be gains both for the tutors and the learners.

The most appropriate institutions to work with on such a project would be those inside the Ministry, either the Curriculum Development Unit or one of the teacher-training institutes. Cape Coast University, which has the main School of Education, also should be considered. The TEDRO (Test Development and Research Office of the West African Examination Council) unit in Accra could help with the evaluation aspects of the program. In assessing the outcome of a program, results concerned with achievement would be by far the most important in Ghana, although many people also would like to see children improve in their ability to express themselves, in their self-confidence and in their skill in learning for themselves.

B. Sierra Leone

Educational Programs and Problems

The basic educational system in Sierra Leone, which also is based on the British system, is very much like that in Ghana. In place of middle school, however, there is a Class 7 following the six years of primary school. Students who do not pass their Common Entrance Examination during the sixth year may enroll in Class 7 for one or even two years in hopes of then passing the CEE. Those who are successful can go on to complete five years of secondary school for an O-Level certificate or seven years for an A-Level. University entrance is possible with either certificate. Those who are not accepted to secondary school can attend rural trade schools, commercial institutes or agricultural schools for two to three years. Culturally, there is somewhat less stress on the CEE than in Ghana.

Overall enrollment in primary school is estimated to be about 60 percent of the age-eligible population. The figure is generally higher in the Freetown area, but perhaps slightly lower in most rural areas. Lack of money for books and school fees, the need some families have to keep children at home to help with farmwork or household chores, and dropping out due to beginning school past normal entrance age are some of the principal reasons for nonenrollment. Not infrequently, parents elect to send one or more of their brighter children to school while keeping the others at home. No such solution is possible in some rural locations, however, where the nearest regular school may be some nine or ten miles distant and there is no connecting road. Interestingly, though, children in many of these very remote locations will have access to a nearby Koran school supervised by a Muslim elder. In the Freetown area, children whose families have migrated to the city several years after they should have begun school very often are denied attendance because of their age.

There are three general types of primary schools in Sierra Leone. The urban schools typical of the Freetown area include government schools, partly supported mission schools and a few private schools. These latter tend to be regarded as being somewhat better, but there is felt to be little real difference between the government schools and those operated, with increasingly less control, by missionaries. Nearly half of the urban schools are shift schools with one group attending from 8:00 to 12:30, and another from 1:30 to 5:30, resulting in a school day of four to four-and-a-half hours. In the remaining schools, classes are in session for five-and-a-half hours, from 8:30 to 2:00. As noted earlier, the schools tend to be strict as to entrance age and for this reason the classes are relatively homogenous. However, this is not true of the Muslim operated urban schools which provide added time for Koran studies and tend to be considerably more flexible as to age grouping. Government and mission schools generally have 35 to 45 pupils per class, although the Muslim schools may enroll 50 or more. Dividing the class into ability groups or streams is fairly common.

In the rural, or district schools, enrollment has risen sharply over the last few years because the government has reduced student fees, because older siblings are able to help contribute due to their own education, because school has been rescheduled so that vacations coincide with weeding and harvest demands, and because newer agricultural methods have reduced the need for children to help work the farms. District schools offer instruction five-and-a-half hours per day, with starting times adjusted to the distance most children will have to walk to attend. Some will have come three or four miles to get to the school. Like the schools in the Freetown area, most district schools consist of six classrooms, one for each grade. Unlike in the urban schools, however, English is not generally used as the medium of instruction until the second year. Another difference is that the teachers in these rural schools tend to improvise more in their teaching methods, and are more likely to stress practical activities rather than academic information.

Some remote areas have shared-teacher schools, which now represent about ten percent of all the schools in Sierra Leone. Formerly, it would not be uncommon to have one teacher assigned to fifty or more students spread over all six grades of primary school. Now, however, two or three teachers sharing a total school enrollment of fifty pupils would be more likely. Typically, grade differences will be maintained within a single classroom for most subjects, with the teacher handling each grade level as an ability group would be taught in a larger school.

Very often in the shared-teacher schools, and to a lesser degree in the district and urban schools, one or more bright children in the room will be selected by the teacher to serve as "monitors" to aid in the teaching process. One who can count, for example, is selected to teach the others in his group to count, or one who is good at spelling will be asked to read out a list of words for the others to try spelling. The "teacher's boy" will use problems or lists prepared by the teacher, and generally contained in the teacher's lesson plan, or some other source such as the classroom copy of the prescribed workbook or, when chosen because of his pronunciation skill, from the list of "difficult" words in the reader. When possible, the teacher will try to correct written work but, because paper is scarce and practice is often oral or on slates, the monitor will be responsible for correcting the work of his classmates as well as presenting the problems. Different children are chosen as "teacher's boy" for different subjects and on different days, depending on who is bright in any single subject and how many bright ones there are.

One type of drill for which monitors frequently are used is the "hot mental", a rapidly paced series of questions all children respond to by writing on their slates. After each few questions, the monitor pauses while the children exchange slates, and then he reads the answers aloud so each child's work can be corrected before he begins the next set of questions. On some occasions, certain of the brighter children may be chosen by the teacher to demonstrate or lecture to the class instead of just leading a drill. The school inspectors generally look upon this practice of "boy teaching" disfavorably, but it nevertheless is a common way of handling instruction in classes with multiple grade or ability groupings.

Another source of instructional assistance to teachers in rural schools are the fifth and sixth year students. Because of the way in which the CEE is scheduled, there often is a period of several months between the time the exam is taken and the end of the school year. These older students quite frequently are excused from their regular classes during this part of the year to serve as monitors in the lower grades. In some schools, this practice is carried still further by using older students during non-academic periods, such as gardening, or when their teacher is instructing their class on a subject in which those children already are advanced, such as arithmetic. School officials do not approve of excusing an older pupil from class for this reason except when necessary, as when an older child is asked to maintain discipline in one of the lower grades during a teacher's meeting.

The older students tend to have mixed feelings about serving as a "teacher boy", with some liking this role and others not. As a practical matter, however, they generally feel they have no choice in assuming these roles and accept whatever assignments a teacher may give. Normally, no older child is asked or expected to give up time from his own studies to serve as a monitor in the period preceding the CEE. In spite of the general availability of help both from brighter children in the same class and from older children, teachers virtually never ask one child to tutor another individually or to create lesson content. Student monitors always are told exactly what to do, such as presenting a lesson exercise prepared beforehand by the teacher, reading a story aloud from a book, or assigning and correcting problems from a specific page of a text. Where this is not possible, as when a group wants help in planning a science project, the teacher will take personal charge.

The typical teacher has attended six years of primary school and one or two years of secondary school, followed by three years at a teacher-training institute for certification. This educational career often is interrupted between attendance at secondary school and enrollment for teacher training by several years due to marriage, the need to withdraw from school to seek work, or other factors. About 30 percent of all primary teachers are uncertified. These "pupil teachers" are primary school graduates, and often they have had several years of secondary education, but they have had no specific teacher training. Many would have continued secondary school except that they had to drop out for economic reasons. Most of the unqualified teachers are assigned to the lower two primary grades. The government is now encouraging these experienced but untrained teachers to return to school for teacher training, and their numbers are steadily being reduced.

An individual with an elementary, or ETC, certificate earns approximately 30 leones per month ($432.00 U.S. per year). A teacher with a TC certificate earns 50 leones per month ($720.00 U.S. per year), and one with a higher, or HTC, certificate which requires completion of an O-Level secondary program, is paid about 100 leones per month ($1,400.00 U.S. per year). Unqualified, "pupil teachers" earn as little as 24 leones per month ($346.00 U.S. per year). By way of comparison, an office secretary could expect to make 75 to 80 leones per month, or close to twice as much as most teachers. The rate for manual laborers would be roughly 7 leones per month ($8.40 U.S.), and an errand would be happily accomplished for 10 to 20 cents (12 to 24 cents U.S.).

Classroom teaching methods in Sierra Leone tend to be influenced to a large degree by the shortage of both individual and classroom materials, aids, and supplies. Exercise books, and even texts, often are unavailable, so teachers tend to use a considerable portion of their time presenting lesson content through lectures and demonstrations at the chalkboard. Children do exercises at their seats on slates, working from problems written for them on the board by the teacher. This tends to limit the kinds of practice that is possible, particularly in the language arts. Group recitation in place of individual study is common, and homework tends to be very limited because there are insufficient texts to go around and even scraps of paper that might be used to copy an assignment or lesson are hard to come by.

The materials shortage, particularly in the non-urban schools, was described as the main problem at the primary level today. Rural schools might have only two copies of a reader for teaching a class of 40 or more children and, in some instances, the teacher may not even have chalk to use at the board. A second problem, again one more pronounced in the rural schools, is the overcrowding of classrooms. The teachers are unable to give any children individual attention, or even be able to get around to all the children during a recitation period. A third difficulty is sufficient space and furniture within the classroom to house the children in each class. Students often sit three or four to a desk and the size of classes tend to be limited, not by design, but by how many children can be contained in the room. The only exceptions tend to be some of the schools in the Freetown area and, of course, those rural schools which meet without benefit of a school building. The fourth problem felt to be an influence on primary education in Sierra Leone is the need to use unqualified teachers, particularly in the first few grades where educational habits are developed.

Students as Teaching Resources

Various uses of students as teaching resources already exist in Sierra Leone. In addition to the use of older or brighter children as monitors within the class as was described above, it is not uncommon for a teacher to ask one child in the class to help another with a difficult exercise, or for students who live near each other to study and do their homework together. There also are "after schools", where an adult is paid a fee to help children who are not progressing well in school. These classes, which meet an hour a day either two or three times per week, enroll as many as 15 to 20 children at a time. The teachers for these schools recruit secondary students to help them. Usually no pay is set, but these students will receive some "dash" from the teacher.

Because some versions of it already are used on an informal basis, a monitorial teaching program would be accepted readily. In-class cooperation also is used to a limited extent, in that children tacitly are permitted to help each other on certain classroom examinations or during recitation, but increasing cooperative activities would not at all reduce the burden on the teacher. Cross-grade tutoring would not be easy to introduce because not that many older children would want, or be able, to help. It would be easier to get one or two older children to drill the rest of the class, or give them exercises, and allow the teacher to tutor those children who need help than it would be to use older students to tutor children in the lower grades. In addition, parents would prefer to have the teachers responsible for the learning of their children than for them to turn this responsibility over to another student. Ancillary instruction also has been relatively common in Sierra Leone. Secondary school students often volunteer their time to teach literacy to rural adults, and more would participate in this program, particularly during holiday periods, if they were paid a few leones a day for their efforts.

One design for a monitorial teaching program suitable for Sierra Leone would be to authorize the use of older students during non-academic periods, such as gardening, so they could serve as helpers to teachers in the lower grades. Many of the older students would willingly do this, especially the brighter ones. This should be a good experience for those who intend to go on to secondary school, and the program would improve teaching in the lower grades particularly in shared-teacher schools or in classes where the children have been divided into streams. The main problem would be that the older students would not be available, even for an hour a day, while they were preparing for their Common Entrance Examinations. There also would be a scheduling problem since subjects like gardening are taught toward the end of the school day in all grades. The schedule would have to be reversed in the lower grades so the monitors could help in the more important subjects but not miss anything important at their own level.

The best approach would be to let the teacher who would be receiving help to choose her helpers by herself from among the children in the upper grades. She would know what subjects the monitor would help teach, and how she wanted those subjects handled. The teacher also would prepare all the exercise material, train her helper the way she wanted, and supervise him. The older children who provide the help all should be volunteers. It would be very bad to pay them because that would put them on a par with the teacher. Depending on how good the older child was, he might help prepare materials. In any case, he would know he had been entrusted with a responsibility and would work hard to make sure he understood the lesson himself. The teachers of the lower grades would welcome such a program providing it was clear to everyone that they were still in complete charge and that the older children were indeed "helpers", and not a kind of teacher. Each teacher would use her helpers in the way she wanted. All teachers are expected to follow the same syllabus, but they create their own day-to-day lesson plans, and they could schedule whatever activities for their helper they thought would do the class the most good.

The easiest grades in which to introduce the program would be in the second and third year of primary school, using fifth and sixth grade students as helpers. In the fourth grade classes, some of the students would be too bright to be taught by students who themselves were only one or two years older. For the first grade, it would be important to use only the best helpers because this is a difficult time for the children as they gradually shift from using their vernacular to English. It would be best if the helper spoke English very well to serve as a model, and it would be a problem to teach him not to revert to the village vernacular when one of the younger pupils was having difficulty. Helpers would be very useful in the first grade, however, because the class then could have much more oral English practice. Building a good foundation in English at the very beginning would help the students for the rest of their school careers. Now, no children get enought practice in oral English because of the large size of most classes.

If a study is done, care should be taken not to compare the relative effectiveness of student helpers and professional teachers, but it would be acceptable to compare classes where teachers were authorized to use student helpers and where they were not. The participation of a local institution would make assessment easier. A project could be carried out with the help of the University of Sierra Leone at Njalla, where the Faculty of Education is, but it might even more appropriately be done with the autonomous Institute of Education in Freetown. The Institute recently was organized to do research, to provide inservice training to teachers and to work on all aspects of teacher training. At present, they have a professional staff of twelve or so.

C. Nigeria

Educational Programs and Problems

The structure of education in Nigeria varies from State to State. The most prevalent model, however, and the one that is in effect in the South, West, and Midwest, is a 6-year primary program followed by five years of secondary school, two or three years of trade school, or four years at a teacher-training institution. A middle school program was in effect for several years but is in the process of being phased out. As in most British based systems, there is an optional two additional years of secondary school leading to an A-level instead of O-level certificate. Secondary teachers typically attend a 3-year course at a teacher training college following receipt of an O-level certificate, but primary teachers almost all are from the post-primary teacher-training institutions.

Attendance at primary school varies considerably. Perhaps 90 percent of age eligible children enter primary school in the Western area, but the rate is as low as 20 percent in parts of the more rural and Muslim North. Overall, perhaps 60 percent of all children begin school in Nigeria, but the dropout rate is high and it is estimated that less than half of those who do begin school complete their primary education. Of those who finish the first six years, roughly half take the Common Entrance Examination, as only about one-third of these, or some 5 percent of the age eligible children, are able to attend secondary school. School attendance is not compulsory in most States.

Rural schools in Nigeria tend to vary considerably in size and quality depending on the area. A typical rural school, however, has six rooms with one teacher for each grade. There may be as few as 20 children per class in the less populated areas, or as many as 50 per class in the larger villages. The better teachers tend to migrate to the cities, affecting the overall quality of primary education in the rural areas. Rural teachers tend to involve the students more in the instructional process, however, possibly because of the generally smaller class sizes. These teachers, who very often are unqualified, tend to teach by lecturing, group recitation and oral drill. The local vernacular is used as the medium of instruction for the lower three primary grades, but instruction is to be in English in the upper primary grades. Teachers in the country schools have little access to materials, and instructional aids are limited to what the teacher personally has devised. Classes are in session five hours per day at the lower grades and six hours per day in upper primary grades. Usually, a school will be found within two miles of most towns in the more densely settled areas, but this distance may be considerably greater in the Northern and other more remote regions. A few of the rural schools operate using shared teachers, but this is not common. Except in the larger villages, the school buildings themselves tend to be rather primitive structures.

The urban schools characteristic of the larger metropolitan centers tend to include multiple classes at each grade level, and a primary school may have as many as 30 classrooms. Classes tend to be large, with 45 to 55 children per class. Some schools, particularly in Lagos, are on a shift basis, with classes restricted to about four and one-half hours per day in each session. The urban teacher has a much greater opportunity to utilize audio-visual resources, and radio or television is in daily use. Urban teachers tend to place less emphasis on rote memorization than their counterparts in rural areas, and they spend more of their class time in group discussion and in giving individual help. Discipline within the classroom has become an increasingly difficult problem in the urban areas where the parents tend to frown on any punishment administered by the teacher. The parents in metropolitan areas also tend to have diminished respect for teachers and are more often beligerent than cooperative. School buildings in the urban areas tend to be soundly built and well furnished in contrast to those in rural locations.

In both rural and urban schools, about one hour of homework will be assigned each day to primary students. The curriculum tends to emphasize traditional academic subjects and there is little in the way of art, music or craft work. The local vernacular is taught, but only mathematics and English are included as content areas on the Common Entrance Examination. Pressures on students to do well on the CEE are not as great in Nigeria as they are in many other West African countries because the examination is not required by many secondary schools. These schools prepare and administer their own examinations, and often use other selection criteria as well.

Ability groupings are not often used in Nigerian primary schools. It is believed that there is a classroom opening for every child who wants to attend primary school, and parental disinterest rather than lack of opportunity is regarded as the prime cause of non-enrollment.

The quality of teaching in the primary schools may be somewhat lower than it formerly was. During the period of internal conflict in Nigeria, the supply of teachers was severely interrupted and, at the same time, efforts were being made to compel primary level attendance and to develop a system of middle schools. As a result, educational standards declined, classroom discipline became a problem, and promotions were given liberally to students who had not demonstrated a reasonable level of accomplishment. Students from those years (1954-1963) are now graduating from the teacher-training institutions and staffing the local schools. Because of their backgrounds, they are either reluctant or unable to upgrade the quality of education now being offered. Both male and female teachers staff the primary schools. Some team teaching is used in the upper primary grades, particularly for mathematics and English. Teachers, if qualified, earn about 800 naira per year (equivalent to 400 Nigerian pounds, or about $1,200 U.S.). Unqualified teachers earn about half that amount. In contrast, a secretary will make roughly 600 naira per year ($900 U.S.) and a day laborer approximately 90 kobo per day ($1.35 U.S.).

The first of the main problems affecting primary education in Nigeria is that there are not enough qualified teachers. Those teachers who are on the job and yet not qualified are not given much in the way of in-service training. The second problem is the attitudes of parents. In the urban areas, many do not show respect for their children's teachers, and in some rural areas parents do not care enough to send their children to school. This is especially pronounced in the Northern Muslim districts and has been particularly true for girls. A third main problem is that supervision of the mission schools, which account for the majority of all primary schools, is inadequate. The government pays the teachers in these schools but, in contrast to the local council schools, there is little systematic control over the operation of the mission schools. The fourth problem is the very unequal distribution of educational resources throughout the country. Some schools have no texts, for example, while schools in other areas may be receiving government-provided film projectors.

Students as Teaching Resources

The unevenness in quality of education, level of teacher preparation, size of classes and availability of materials in the various sections of Nigeria probably would prevent any single model or approach from being suitable everywhere. Despite this limitation, cross-grade tutoring may hold the greatest promise for Nigeria. An in-class cooperative program would not do much to improve education. There is considerable variability within classes, and those children who have a better background or have a library at home usually concentrate better and learn faster. These children sometimes are asked to demonstrate work at the board or stay after school to help a slow learner, but if this approach were expanded, the brighter children would always be giving help and the slower children always receiving it. Children normally don't work together in school. Monitorial teaching is used now. For example, older children may be used as aides to help the teachers prepare materials or keep discipline. There would not be much need for ancillary instruction because all students who want to can go to school, and it is commonplace for those who need extra help to receive special coaching after school hours in classes taught by regular teachers for extra fees from the parents.

The success of a cross-grade tutoring program would depend on how well the tutors were trained and supervised. Everyone would feel the older child was not likely to teach as well as a regular teacher, particularly because he more than not would focus on the immediate problem and not help to build a foundation. Some older children also would tend to act superior to the younger children and even bully them, although most would act protectively toward those they were supposed to help. Both groups of children would like this kind of program, but many parents would say the teacher is doing it only because he is lazy. The older children should not try to teach, but only help the younger ones with their lessons and try to answer questions. The older children would like to prepare materials, too, if they were trained to do this, but the regular teachers would not like them to teach, only to help. This could be done during normal school hours, because an older child could miss an hour a day in subjects he was good at. He would be doing work ahead of the rest of his class anyway, and it would be easier for his own teacher to concentrate on those children who needed instruction. The older children may be better teachers than the regular classroom teachers because they are students themselves. They would want to do a good job to demonstrate their superiority.

As to a cooperating institution, a project could be carried out at the demonstration primary schools which are attached to each of the teacher-training institutes for practice teaching purposes. It might be better, though, to work with one of the Institutes of Education such as those located at the Universities of Ibadan, Ife, Nsuka and Ahmadu Bello. These Institutes are connected with the Faculties of Education and do in-service teacher training and conduct research on the primary school level. The Institute at Ibadan is perhaps the most experienced, and this also is the location of a newly-formed educational evaluation training center.

D. Viet Nam

Educational Programs and Problems

The educational program in Viet Nam follows a 12-year, U.S.-style sequence. There are five years of primary school, four years of junior high school, and three years of high school. School attendance traditionally has been high, but the percentage of children attending school understandably has been affected by the hostilities, by the consequent migration to the cities and refugee sites, and by the alternating control of hamlets in many rural areas. At the present time, it is estimated that some 65 percent of age-eligible children attend primary school, 35 percent go to junior high school, and 25 percent are enrolled in senior high school. At all levels, enrollment is considerably higher in the metropolitan areas, particularly around Saigon, and substantially lower in rural locations. At present, education is not compulsory. There are two typical kinds of primary schools, those found in major urban areas and those found in the hamlets. Numerically, more than half of all primary enrollees attend urban schools.

The urban primary schools average 10 to 20 classrooms for the five grades. Most metropolitan schools are not coeducational; some schools are designated for boys and others for girls, although the overall program covered in each is almost identical. Classes average between 55 and 65 students, and most urban schools are on a shift basis. Students in the fourth and fifth years meet four hours per day, from 8:00 to 12:00 or 2:00 to 6:00, six days per week. The first grade meets only two hours per day, and most first grade teachers are responsible for two successive sections of first graders during their morning or afternoon assignment. Second- and third-year students meet three hours per day. These teachers use their spare hour to complete records and report forms for the entire school. There are 40 weeks of school each year, divided into two semesters.

Most urban teachers are qualified according to present standards. There is considerable emphasis in the classroom on rote memorization, but there also is copy work and problems written on the chalkboard for students to reproduce in their exercise books. Many classes have simple workbooks, some of which are authored locally by a teacher in that school. Not much is available in terms of audio-visual aids. Teachers use sing-song methods in the lower grades; in the upper grades, they call upon individual students for recitation, but the class generally is too large to permit the teacher to get around to all the students. During visits to primary classes in Saigon, two rather effective methods were observed which tended to simplify instructional problems in these large classes.

In one room, the students were expected to applaud, or withhold applause, depending on the correctness of the answer given by each of their classmates during a recitation period. It was clear from one instance, when three or four students started clapping in response to an answer but then stopped when it was evident that the others in the class did not agree the answer was correct, that this technique can provide useful learning experiences to the entire class, as well as maintaining attention and, of course, serving as a timely reinforcement for the reciting student. In another room, the teacher wrote an arithmetic problem on the board. The children then copied the problem onto their individual slates, wrote their answer, and then turned their slates face down. On a signal from the teacher, after everyone had finished, all the students raised their slates at arm's length above their heads. The teacher thus was able to check the work of every student very rapidly by scanning the class from the head of the aisles, a task made even simpler and quicker by having the pupils carefully ordered by height from the front to the back of the room. The teacher wrote the next problem on the board as the students erased their slates and, while the class worked on the second problem, the teacher had time to give individual attention to those students who were incorrect on the first exercise.*

Aside from the individualization that is possible during recitation or this sort of exercise, there is no division of classes into ability streams or groups. One to two hours of homework is assigned each day, but fifth graders may be responsible for three or more hours of study daily outside of school. These fifth-year students must prepare for the entrance examination to JHS, described as the "hardest exam in a student's life."

---

*Fundamentally, this technique accomplishes about everything claimed for the widely noted EDEX system for collecting and analyzing student responses during instructional periods, and at a far lower cost.

If admitted to the secondary program, the student is eligible for seven years of free education and the possibility of university or technical training. If not accepted, the student has, at present, very few options for improving his well being. For this reason, many urban fifth graders attend private coaching sessions lasting two or more hours per day. These supplemental classes average 20 to 30 students per group and usually are taught by moonlighting teachers from the regular schools.

The primary school curriculum consists of Vietnamese, which is the medium of instruction, social studies, science, and mathematics. Physical education is in the syllabus but rarely is offered in urban schools due to the lack of appropriate space and facilities. In addition, girls in the upper primary grades take sewing and boys take art. Language arts are emphasized and receive about 30 percent of the available class time. The Chinese population, which is concentrated largely in the Saigon area, have their own schools. These schools use Chinese as the medium of instruction, while Vietnamese is taught as a second language. Otherwise, the curriculum is comparable to that offered in the regular program. Government inspectors also supervise these schools, which serve perhaps one sixth of the population around Saigon.

Hamlet schools typically consist of five classrooms, one for each grade. Several are smaller, however, and may offer only the first three years of lower primary education, or may combine classes under shared teachers. These schools are less crowded than those in metropolitan areas, with perhaps 30 to 40 students per teacher. Hamlet schools also use a class schedule that varies according to the grade, with four hours again the maximum. Shifts are never used, however, and classes tend to begin later in the morning than in urban areas for security reasons. Because textbooks must be purchased by the students, they are far less available in the poorer, rural areas than in the cities. Up to three children often will share a text where books are available, but in some cases, no texts have reached the area and the teacher has to write the lesson on the board for the children to copy. Even in urban areas, at least a few students in each class seem unable to afford texts, a problem that has become increasingly pronounced since AID terminated support for a text-printing program in 1968.

Teaching methods in the hamlet schools reflect the shortage of texts as well as the preponderance of unqualified teachers. Considerable time is devoted to copying passages from the chalkboard, and there is very little in the way of give-and-take explanation or discussion. Because families tend to be concentrated in hamlets, and very few people live on farms, access to schools in most areas is not a problem. Only in the highlands would it be necessary for a student to walk any substantial distance to reach a school, which could be as far as five to seven miles from his home. Education in many of the hamlet schools has been complicated by the hostilities. In some areas, classes meet only irregularly, and a child may receive the equivalent of no more than four months of instruction during the entire year. A major reason for this is that teachers assigned to hamlet schools tend to live in the larger villages, where they feel safer, and travel daily to the hamlet after the road is open in the morning. Because they must be home before dark, the school day often must be shortened, and frequently no travel at all is possible.

Rural children tend to begin school late, at perhaps eight or nine years of age. This means the boys, at least, have little expectation of finishing before being drafted at age eighteen. Many young children are expected to stay home to help their parents, but insufficient funds for books, uniforms, and other school expenses probably is an equally important cause of non-attendance. Dropouts tend to occur when a child is old enough to help on the farm or even earn money on his own, at age thirteen or fourteen. Another problem is getting to the nearest junior high school, or to an upper primary school when the hamlet school does not extend past third grade. Education nevertheless is valued in the culture and most children already have been taught to read by their parents or older siblings before entering the first grade. Urban schools are used extensively in the evening for adult education programs, although this cannot be done in the hamlet schools.

The standard teacher preparation sequence in Viet Nam consists of eleven years of the regular school program followed by two years of teacher training. Recently, efforts have been initiated to upgrade the preparation of teachers by requiring a full twelve years of education before entering the 2-year teacher-training program. It must be noted, however, that only one-third of the 60,000 elementary teachers in Viet Nam are qualified. The remaining teachers generally have completed only seven years of school followed by a 3-month "emergency" course to prepare them as teachers. Qualified teachers are more typically found in the urban schools, and unqualified teachers in the rural areas. Teaching traditionally was more of a male occupation but, because of military service requirements, most primary teachers are now female. Qualified teachers receive about 15,000 piasters per month (or $350.00 U.S. per year), while unqualified teachers earn about 8,000 piasters per month ($188.00 U.S. per year.) A secretary will make about 17,000 piasters per month ($400.00 U.S. per year) and an unskilled laborer will earn about 7,000 piasters per month ($165.00 U.S. per year). A youth would expect about 200 piasters ($.40 U.S.) for an errand.

The most pressing problem of primary education in Viet Nam is the large proportion of unqualified teachers. There is, at present, no program of teacher upgrading. Nor is there much expectation of being able to replace existing unqualified teachers for some time, despite recent surges in teacher applicants due to guarantees of a steady job for 30 years at a time of heavy unemployment. The overall problem has been made still more acute by an expanding secondary program which has been absorbing the better qualified teachers from the primary schools. A second problem is that there are not enough schools, and too many children per room, particularly in urban areas. This problem is being overcome by the construction of modern new buildings although substantial changes will take some time. Because of the steady migration to the cities, space generally is available in hamlet schools and there are now sufficient numbers of them. School furnishings are not a particular problem. A third problem, one that already has been noted, is the general shortage of textbooks. The fourth generally recognized problem is one peculiar to the hamlet schools. In the rural areas, local political leaders tend to use the teachers for a variety of non-educational duties, such as canvassing before elections. Teachers are well respected, and their prestige is seen as useful by provincial officials.

Students as Teaching Resources

Tutoring has had a long tradition in Viet Nam due to past French influences. Years ago, schools were harsh and authoritarian, and the rich hired an individual tutor for their child rather than send him to school. Perhaps because of this tradition, individual attention is felt to be desirable and, for this reason, any model which facilitated increases in individual help would tend to be accepted. In-grade cooperation is not used in the schools now, although friends sometimes do help each other outside of school. If this cooperation could be expanded, the added practice it would bring would be beneficial, particularly if the students learned how to do this at school so they could be more helpful to each other after school. Using time during regular school hours would not be as practical. The class day is quite short, and it would be inappropriate to devote more than half an hour each day to permit students to practice all of the subjects covered earlier in the day with each other. In either case, the available time would be used best if the students were asked to help each other by summarizing lessons for each other, and by the brighter ones helping the weaker ones.

A cross-grade tutoring program would be very desirable because the teachers are concerned about children who are not doing well, and yet the classes are too crowded for them to really give any children very much individual attention. Younger children who need help would like to get it, and they would not be embarrassed if help were offered to them. It would be difficult to do this during the school day, however, because it would not be appropriate to ask an older child to miss any of his own class time. He has his own work to do and would not want to leave his class, particularly if he was bright, for fear that he might miss something important. His teacher would not want him to leave for the same reason. Those in the fifth grade, particularly, worry about their exams and should not be expected to miss any school. One alternative would be to use older children who attended the other shift in a shift school as tutors, but these children have homework, and very often housework, to do and they could not be asked to put off these duties very often.

The use of older children for monitorial activities is done now, but only to keep discipline when a teacher in the younger grades attends a meeting or for some other reason must be absent temporarily from the classroom. Even in these periods, the older student is not asked to teach, however, because the teachers feel it is not appropriate to leave any kind of teaching to a student. Even brighter, older students would not be expected to do a good job without having been trained in teaching methods and, even then, most teachers still would not regard them as capable. They would feel that lessons taught by students would not be the best use of available class time. Occasionally, groups of students in a class will work cooperatively to prepare and present a lesson, but this is done for their benefit because the teacher generally could do a better job presenting that same lesson to the class.

Of all four of the models, ancillary teaching may be the most useful in Viet Nam. In both rural and urban areas, there are many children who cannot attend school either because the family is too poor or because they have to stay at home to help with household and farming tasks. There also are some children in the hamlets who do not start school until they are seven or eight years old because it is too far to walk. Now, these children often are taught in the evening by an older brother or sister who is attending school, or even by a neighbor's child. They not only learn reading, but arithmetic and social studies as well. Children in the fourth and fifth grades like to do this. They respect teachers and want to imitate them. At the present time, those doing the teaching use their old textbooks, but it would be good to give them more suitable materials. It also would be good to train them so they can be more effective and more successful. Conceivably, this training could be part of their own education, and their own teacher could assist them with problems if not too much class time was used this way. The children doing the teaching generally would not expect to be paid, and probably they would do a better job if they were volunteers. Pay also might sabotage the existing educational system since even token amounts would appear to detract from the likelihood of increments for professional teachers. It would be appropriate, on the other hand, to reward these children with textbooks or notebooks or pencils. Many of the children who would do this are needy and it would be a way of helping them obtain school materials and thereby encourage them to stay in school.

Several possibilities exist in terms of local institutions which could help in carrying out a project using students as teaching resources. Any of the four larger normal schools, for example, would cooperate. There also is the Elementary Teacher Training Center at the Saigon Normal School which has responsibility for the in-service training of rural teachers. Perhaps the best place, however, would be the Research Office of the Ministry of Education.

E. Thailand

Educational Programs and Problems

Primary school in Thailand is a 7-year program. The first four grades, or lower primary, is compulsory and includes language arts, arithmetic and social studies. English is added in the upper primary grades, but there is little science or physical education at either level. Secondary school is a 5-year program, but students can leave at the end of three years to enter a 2- or 3-year vocational program or a 2-year course at a teacher-training institution. It is estimated that 90 percent of all children enter lower primary, and that 80 percent finish. The enrollment in upper primary is about 40 percent of the age-eligible children, and in secondary it is about 20 percent. At the present time, the school enrollment in the lower primary schools is actually 114 percent of all children aged six to nine years due to the number of over-age children who are now attending school.

There are four kinds of primary schools. The most prevalent are the "*Buddhist Temple*" schools located in the villages. These are government operated schools situated at the temples because of their central locations and the land available on their grounds for school buildings. Most are shared-teacher schools with two or three teachers for the four lower primary grades. Only a few of these schools provide instruction beyond the fourth grade. An average class size might be as large as 60 at the first grade level, but as low as 40 at the fourth grade due to drop outs. Most temple schools will have a total enrollment of between 70 and 100 divided among the four grades. A majority of the teachers in the temple schools are unqualified, although efforts are being made to replace these teachers with ones who are qualified. Instruction is based on lecture methods with some individual recitation. Children are assigned work in copy books, particularly in the shared-teacher schools where one grade is given seat work while the teacher presents a lesson to the other grade in the room. Classes run from 8:30 or 9:00 to 12:00 and then resume from 1:00 to 2:30 or 3:00. This provides a 5-hour school day. Schools are in session five days a week for three 14-week terms each year.

District Center schools located in the larger villages offer a full seven years of primary education. Typically, there will be one teacher for each of the upper grades, and two or more teachers for each of the lower grades where enrollment is heavier. Each district center school, then, will have 10 to 12 teachers, including a headmaster. Most classes will average 30 to 40 pupils. The program is the same as in the temple schools, but textbooks are in better supply, the teachers are more highly qualified, and the facilities are considerably more substantial. Unlike in the temple schools, where the children sit at crude benches or on the floor and have to share government supplied texts, the children in district center schools are likely to sit at regular desks and have ample books and materials.

Metropolitan primary schools in the larger cities are likely to have enrollments as high as 1,000 or more spread over the seven grades, and there will be 20 or more teachers assigned to each school. Classes will average 45 to 55 students each. Otherwise, the quality of instruction and availability of materials is similar to that in the district center schools. Major cities also have a number of private schools which enroll about 10 percent of the children in the area in grades one through four, and 30 percent of those in grades five through seven. The students pay fees in all of these private schools. While a few are wealthy, others of these schools, especially some of those operated by missionary groups, are quite poor. Class sizes generally are equivalent to those in the government operated schools. Often, but not always, the quality of instruction is considered better in the private schools than in the public schools.

Entrance to secondary school is based on examination results, but preference is given to those who reside in the area of the school. Each school constructs its own examination, with some schools now assessing aptitude in addition to the usual achievement subjects. About 60 percent of those who graduate from the seventh grade in March take one of the secondary entrance examinations, which are given in April. Roughly 85 percent of those who apply will be accepted. There also are private secondary schools which tend to be the choice of students who have attended private primary schools. The "river" schools which once served the children living on boats in the rivers and klongs, or canals, no longer operate.

Qualified teachers at the primary level in Thailand receive about 6,000 baht per year ($300.00 U.S.). There is not much difference in the pay of qualified and unqualified teachers. An office secretary in Thailand will earn about 12,000 baht per year ($600.00 U.S.) and an unskilled laborer will make about 3,600 baht per year ($180.00 U.S.). A young boy would want about 10 baht ($.50 U.S.) to do some task requiring a few hours of his time.

The first of the principal problems affecting primary education in Thailand is a shortage of schools in the rural areas that offer grades five through seven. The nearest village with a school offering a full primary program may be five to fifteen miles from the hamlet where the child lives. There is no money right now, however, to construct or staff the additional schools that are needed at this level. A second problem is that there currently is an insufficient supply of teachers. In fact, there are a number of school buildings and classrooms throughout the country which are empty because funds are not available to add the necessary teachers. The third problem is that the curriculum is not felt to be relevant to a child's later life. Emphasis is given to academic subjects appropriate only for those who continue their education beyond primary school. But, now that the first four years of school are compulsory, many more students are enrolled and most of these students are not likely to remain in school beyond the seventh grade at most. There is little parallel between the curriculum and village life, which makes the content both difficult to learn and difficult to teach.

Students as Teaching Resources

After the overall purpose of the survey was explained, one of the Thai informants recalled a speech made by Dr. Kaw Swasdi Panish at the Bangsan Seminar in August 1971 for the supervisors in the Department of General Education. Dr. Kaw, who now is Director General of the department, offered a prize of five promotion steps (one per year is normal) plus his efforts to see that a Thai university awarded a Ph.D. for contributions to education to anyone on his staff who was able to implement a workable system for "using students to teach students."

The desired focus of efforts to improve education in Thailand is on the weak students. Although it is recognized that many countries emphasize making good students better, the Thai, if they were able to do only one or the other, would allocate their resources to helping the weaker ones. The better students, it is felt, can help themselves while the weaker ones need help to learn. Perhaps for this reason, cross-grade tutoring was felt to be a particularly suitable model. Programs based on in-class cooperation were felt to be unworkable in large classes except if the teacher was more capable than most Thai teachers of managing such a system. Monitorial teaching programs would mean that some children would miss some of their own school time, and their parents would object. They would feel their children are in school to learn, and not to teach. There also would be some distrust over the accuracy of a monitor's presentation by the teachers, the parents and even the children who were receiving the lesson. Many people already feel teachers do not know enough, and the problem would be worse if students also taught. A program of ancillary teaching also is a posssibility because there are a number of children who do not now go to school. However, there is a program for which university students volunteer as participants. They go into the slum areas and teach children not in school during the evenings, following more or less the standard school syllabus.

One way of implementing a cross-grade tutoring program would be for the teacher to choose the very best students from the class she taught last year. These students would be asked to tutor the weakest students in the present class during the lunch hour or immediately after school. This schedule would be best because the tutors would not have to be taken out of class and miss work at their own grade. The tutors would like to do this, and would cooperate. This would be particularly true of those living in the villages, who live near the children they would help. There may not be any fifth year children available to help fourth year students who are having difficulty, but at this age it would be all right to use other fourth graders. Those fourth graders who are learners will accept help from their classmates unless the brighter children start bragging. Friends tend to help each other with their homework anyway, with the one who is best in that subject helping the other ones.

The best reward for the tutors would be the progress made by the children they are helping. They will be proud of their student's accomplishments. Helping each other also is important to a villager, so the tutor's parents will be proud of him. The parents of the learners may fear losing face because their child needed help, so it would be good if the weaker one also could be the tutor in some subject, even for a younger child. Any program would have more likelihood of success if everyone could take the role of the tutor at one time or another. The content of the sessions should be left to the students themselves. Usually, the weaker student will want help with his homework and also want to ask questions or get assistance on things he does not understand. It should be up to the learner to ask the questions, and to decide when he no longer wants help. The learner will have his own textbooks and will know what he is expected to learn. The teacher will have to select the right child to be the tutor, both on the basis of his knowledge and personality, and she will have to convince the weaker students to accept help from an older child.

In Thailand, the best institution to work with in establishing a program would be the Department of General Education in the Ministry. This department is responsible for both primary and secondary education. The universities have no working relationship with the schools, so normally any research is done inside the Ministry.

F. Indonesia

Educational Programs and Problems

The structure of the educational system in Indonesia is now being changed from one consisting of six years of primary school, three years of junior high school, and three years of senior high school to one of eight years of primary and four years of secondary education. At present, whose who want to enroll in vocational programs first complete the primary program and then take either one or two levels of vocational studies, each consisting of three years of school. Teacher training follows a similar pattern. A lower primary certificate is awarded after the first three years of teacher training, which follows graduation from primary school. Those who continue on for another three years receive an upper primary certificate. This, too, is being changed, however, to a program which awards a "new" primary certificate to those who complete nine years of regular education followed by three years of teacher training. It is estimated that some 90 percent of the eligible children are enrolled in the lower primary grades, or the first three years of school. The percentage falls to 60 percent in the fourth, fifth, and sixth grades of upper primary, to 15 percent in junior high school, and to 3 percent in senior high school.

Primary schools in the more populous areas generally have six rooms, one for each grade. There will be some 30 to 40 children per class. The lower primary grades meet from 7:00 to 10:00 six days per week. Upper primary classes are held from 7:00 to 1:00 five days per week and from 7:00 to 11:00 on Fridays. This provides 18 hours of instruction each week for the lower grades and 34 hours for the upper grades. School is in session 40 weeks each year. Only a few schools are on a shift basis, and those on shifts are largely limited to the lower primary grades. Classroom methods tend to be very teacher-based, with most of the time devoted to lectures or demonstrations by the teacher. There is little discussion, individual recitation, or seatwork practice. Homework tends to be heavy, with two hours or so assigned at the lower grades and three hours or more at the upper grades each day. Government-supplied textbooks generally are available, and the students may take them home during the week to study and complete assignments. Audio-visual aids are virtually absent.

Primary schools in the less populous areas serve large areas of the country, but only about 5 percent of the population resides in these areas. Many of these schools offer only the first three years of instruction. Often there will be three classrooms, but only one teacher who circulates among the rooms to present lessons. There will be as many as 20 to 25 students enrolled in the first year class, but as few as 10 in the third grade group. Teaching methods are similar to those used in the schools in more populous areas, except that seat work is assigned when the teacher is occupied with another group. Class hours tend to be more flexible in these schools and, as a result, the amount of instruction tends to be somewhat reduced. Because the schools serving the outer regions are widely separated, a child may have to walk 8 or 10 kilometers to attend. While the quality of education offered in these schools tends to be lower than it is in schools in the more densely populated areas, a number of them are surprisingly good due to past missionary influences, especially in aboriginal districts.

The curriculum in both types of schools begins with reading and writing Indonesian, arithmetic, prevocational studies, such as gardening and home economics, and civics. Social studies and general science are added at the upper primary level. In areas where one of the vernaculars is used, that language also is taught in the lower primary grades and is used as the medium of instruction for the first three years. Indonesian is the medium of instruction in all upper primary classrooms. Students are not grouped within classes either by ability or for convenience. Examinations are given in the last years of primary and junior high school to determine who is eligible to continue with their education. The vast majority of teachers, who are mostly male, have at least a lower primary certificate. With the ongoing change in standards, however, these teachers now are considered underqualified. They represent about 75 percent of all teachers employed at the lower primary level and 25 percent of those teaching in the upper grades.

Indonesia is a Muslim country and, while its citizens' religious beliefs tend to be somewhat more modern than in other parts of the world, at least 20 percent of all children attend Koran school in addition to regular classes. Koran classes usually are in session three to four hours a day and, unlike in many regions, both girls and boys attend. Instruction is held both in

Arabic and in the local vernacular. These schools play an important role in Indonesian communities, and large numbers of adults and youths attend, as well as children. Unfortunately, the regular public school often is held in less regard, especially by rural parents. Dropping out of school at the end of lower primary is commonplace due to parental preference to have the children work on the farms as soon as they have grown old enough. Because children often do not begin school until eight or nine years of age, they generally complete no more than three years of school before being old enough to help raise and harvest crops. Marriage at age twelve or so, while illegal, also continues to be practiced. The government, on the other hand, feels that at least four years of education is required for usable literacy and that less than this amount constitutes a waste of present and future resources.

A typical teacher in the Indonesian primary school earns about 15,000 rupiahs per month ($435 U.S. per year). Secretaries in the private sector will earn about twice as much, while an unskilled workman will make about 4,000 rupiahs per month (120 U.S. per year). There is not much difference between the pay of a qualified and underqualified teacher. It is important to note, however, that teachers, as government employees, also receive free rice, sugar, soap, and sometimes even clothing. Also, many teachers moonlight. While there is a shortage of salaried opportunities for these teachers, a significant number are shopkeepers, almost all maintain a small farm, and many obtain paying positions as a village councilman or district representative. Teachers are the best educated individuals in the village and tend to be respected and have considerable status in their communities.

There are a number of problems that are recognized as important constraints on upgrading primary education in Indonesia. First, education in the primary grades is not considered particularly relevant. The main emphasis is on preparation for secondary school, but spaces at this level are limited, and will continue to be limited, at least for the next several years because the government has determined that the economy will only gradually be able to absorb vastly increased numbers of better educated children. Because of this, it is important to redesign the primary program to make it more practical, more citizen-oriented, and more effective in preparing people for jobs. Parents trust the teachers and tend to leave curriculum decisions to them, but the teachers are not adequately trained to take the needed initiative. Primary education also has to be given more of a regional emphasis and, instead of having the effect of making urban living attractive, it must prepare students to cope with the manpower and technological needs of rural areas.

A second problem is that teachers are hired and supervised by the Ministry of Education but paid by the Ministry of Internal Affairs. This makes the task of the inspectors very difficult and divides the loyalties of the teachers. Third, the present primary program is rigidly viewed as six full years of instruction despite the large number of dropouts, the high proportion of repeaters, and the mixed age of beginners. What is needed is a more flexible approach which at least considers an alternative five-year program and which allows students to re-enter after they have been out of school for three or four months to help work on the family farm. A fourth problem is the large number of primary school teachers who leave the schools each year. It is estimated that it is necessary to train 20,000 teachers per year just to replace those who have left. Finally, there is the problem of recognizing children as individuals and teaching them to solve problems instead of memorize. Teachers want to solve problems for their students. They are afraid to raise problems in place of simply teaching. The students, too, are unwilling to change. They feel they are expected only to sit and listen.

Students as Teaching Resources

Students teaching other students, either individually or in groups, is a traditional practice in the Koran schools even though it is less important in a modern school. In a Koran school, the students are quite heterogeneous and the better students are expected to help the newer ones memorize passages. Even at the more advanced level, where students are expected to concern themselves with the interpretation of passages, students cooperate with and help each other. Students are not ashamed to ask for, and get, help from their better classmates. Despite this very frequent use of tutorial methods in the Koran schools, there is no effort made to include tutoring as a teaching technique in the primary schools. Teachers in the regular schools in

Indonesia have very little sensitivity to individual differences or the need for individualization. They regard the class as homogeneous and are not likely to single out specific students who need help. Yet, there are many students who fail, and any student who fails twice is not permitted to continue.

In many respects, then, both in-class cooperation and monitorial instruction are programs that are likely to be feasible and acceptable in Indonesia. Cross-grade tutoring, with its emphasis on special attention for children who are having difficulty in school, is likely to be impractical considering the attitudes of the teachers. This could be remedied with extensive training, but it also is felt that parents would hesitate to have their children singled out as those needing extra assistance. This is one of the reasons why ability grouping is not used now, and why teachers are not likely to aid a child who obviously was having difficulty. Ancillary teaching is not really needed at the primary level since nearly all children have access to a school which at least offers the lower primary grades. Those who do not go either are not interested or do not have the time for an education.

One approach to a program of in-class cooperation would be to enhance what the children tend to do already. Most children join in informal groups in the afternoons, to study and do their homework together. With the right kinds of materials and training, they might get more out of this activity. This would not take away from class time but would improve the quality of education. Trying to do this with their present texts would be too difficult, however. Indonesian texts are felt to be too often written for the teachers rather than the pupils, and usually do nothing else than summarize more advanced texts. The teachers also tend to give assignments without giving the students any preparation to help them understand what is in the text.

Monitorial instruction already is used in the shared teacher schools. The teacher will write a number of problems on the board for that grade and then appoint one or two students to do the teaching by having them demonstrate how to solve the problem and then get their classmates to try for themselves. Sometimes the monitors will be better than the teachers, because they often try to give an explanation or individual help. In schools where there is a teacher for every grade, the teacher also will appoint some monitors to serve as aides. Any of the eleven IKIP's (Institutes for Teaching and Educational Science) would be appropriate institutions to work with on developing a program to make better use of students as teaching resources. Two of these, the one at Bandung and the one at Djakarta, have good reputations and have the manpower and capability to deal with research problems.

G. The Philippines

Educational Programs and Problems

The educational sequence in the Philippines is a ten-year program. There are six years of primary school, divided into four years of lower primary and two years of upper primary, followed by four years of secondary school. Technical or vocational education may substitute for part or all of the secondary program. Teacher training is entirely at the university level and consists of a four-year course leading to a degree of Bachelor of Science in Education. The six years of primary school are compulsory, but a significant number of children drop out at the end of the first four years. Estimates of enrollment are 95 percent of the age eligible children in the lower primary grades, 85 percent in the upper primary program, and 50 percent in secondary school.

Urban schools account for about 20 percent of primary enrollment. These schools, located in metropolitan areas and in the larger towns, offer grades one through six. These schools range in size from 15 to as many as 50 classrooms. Almost all operate on a shift basis, with half of the students and teachers meeting from 7:00 to 12:00, and the other half using the facilities from 12:00 to 5:00. Schools are in session five days per week, 40 weeks per year. A typical urban classroom contains 35 to 50 children. Usually, the students are divided into streams, or ability groups, for lessons in mathematics, reading, and English. The medium of instruction in the first two grades is one of the 80 or so vernaculars spoken in the country. From the third grade on, English is used as the medium of instruction.

School buildings and instructional materials are in short supply. Many schools in the urban areas are in rented facilities which often have small rooms, inadequate lighting, and even leaking roofs. Textbooks are government-supplied, but there are not enough to go around, and it is not unusual for up to three students to share a text. So that children can take books home in the evening to complete the hour or so of homework expected each day, exercises are assigned in shifts with different children working on different subjects on any given day. The teachers, most of whom are female, are all college graduates and generally of high quality. In the classroom they have the use of an ample variety of audio-visual aids, including films, television, and other kinds of materials. Teaching methods generally are problem or project oriented, and lessons tend to focus on work skills such as gardening, basket weaving, or carpentry. There is very little lecturing. Teachers receive regular assistance from supervisors, and their classroom approach is felt to be very up-to-date.

The syllabus in the primary grades includes reading and writing in both English and Tagalog-based Filippino, science, mathematics, social studies, music, art, health, physical education, character education and work education, which includes industrial arts as well as elementary agriculture and home economics. Classes in religion, which are taught by representatives of religious groups outside of regular class hours, are optional. Children generally enjoy school and, for the most part, parents have aspirations for their children and want them to attend school as long as possible.

There are some 35,000 rural schools in the Philippines which enroll about 70 percent of all students. The remaining students attend schools in the smaller towns. A typical rural school has three teachers and three classrooms for the six primary grades. Generally the children will be divided into P-1 with P-2, P-3 with P-4, and P-5 with P-6. Ability grouping also is used in these shared-teacher schools. For example, the teacher assigned to the third and fourth grades might divide the class during the reading period into the lower third grade, the upper third grade together with the lower fourth grade, and the upper fourth grade. Most rural schools have two small, adjacent buildings, one used to teach home economics to girls and the other for teaching industrial arts to boys. The main building is likely to be a prefabricated structure or one made of local materials, such as bamboo. Typically, there is no electricity.

There are generally 30 to 45 pupils per classroom in a rural school. The subjects taught are about the same as in an urban school, but textbooks are in even shorter supply, and ratios of six students to one book are not uncommon. The teachers are often as good as those found in the cities, but their methods have had to be adapted to the more heterogeneous classes and the lack of audio-visual materials. Rural schools operate from 8:00 to 11:00

in the mornings and then resume in the afternoons from 2:00 to 5:00. This provides a six-hour instructional day in contrast to the five-hour day used in the metropolitan shift schools.

Teachers in both the urban and rural schools prepare a considerable amount of their own material, such as exercise sheets. Generally, a portion of every day is set aside for instruction on work skills or for carrying out community development projects. This latter activity is a revival of the "community schools program" that was first introduced in the 1940's and includes community service projects such as tree planting, the installation of sewage systems, and street cleaning. In rural areas, these teacher-led activities are conducted during school hours, but they are held in the non-school portion of the day for urban classes which meet on a shift basis. All children participate in these projects. A continuous progress program is a current aim of educators in the Philippines. At the present time, instruction is group-based, and eventhough ability grouping is used, there are few opportunities to provide each student with assistance tailored to his own needs. One of the goals of this program would be to allow children to proceed through primary school at their own pace, and to eliminate failures.

A typical teacher in the Philippines earns 345 pesos per month (or about $1,600 U.S. per year). By way of comparison, an office secretary will make about 300 pesos per month ($1,540 U.S. per year). Unskilled workers earn the minimum wage of 8 pesos per day in the cities or 6 pesos per day in the rural areas ($1,260 U.S. per year). There is no shortage of fully qualified teachers. In fact, of the some 30,000 teachers who are graduated each year, 20,000 are unable to find teaching positions and must seek employment in other occupations.

The most evident problem affecting primary level education in the Philippines is the lack of adequate buildings. As noted above, neither the urban nor rural schools represent very satisfactory teaching facilities and neither provide the space or amenities that are necessary for quality education. A second problem concerns the adequacy and availability of textbooks and other teaching materials. Teachers are trained to use a variety of aids, but these are not available in most classrooms. Newer and more widely available textbooks also are required. The third problem is that of premature dropouts from education. There are several reasons for leaving school. Perhaps the main one is poverty, which leaves children without adequate clothing and forces them to try to obtain work or help their parents in farming or fishing. Another reason is illness, either of the student or one of his parents, which reaches its peak during the monsoon period in the late fall. Students who miss several weeks of school are expected to remain out for the rest of the year and then repeat the grade in the following year. A third reason is the actual difficulty some children encounter in getting to school, particularly during the monsoon season. The distance, which generally is less than five kilometers, is not as significant a problem as the dangerous roads and swolen rivers. Finally, many children are "spoiled" by their parents who are unwilling to urge them to attend school when trivial objections are raised.

Students as Teaching Resources

A shortage of qualified teachers obviously is not a constraint on education in the Philippines. Nevertheless, the use of students as teaching resources in an otherwise group-centered classroom could lead to the greater individualization of instruction and bring the desired continuous progress scheme nearer to reality. At the present time, students become spread further and further apart in their performance at each successive grade level. These students are felt to need instruction and materials that are graded to their own abilities and rates of progress, but such a solution is very difficult to implement if all children in the room must depend on only one teacher for their instruction.

Some form of in-class cooperation would be the most suitable kind of program for the Philippines. Other uses of students to help teach have been used, however. For example, some teachers will borrow a good student from a higher class to help one of her own pupils in reading through cross-grade tutoring. The older student gives remedial instruction based on what the teacher tells him to do. She will give him a lesson plan and the materials he is to use, but he will serve as a model for the younger child and judge the correctness of that child's responses. Generally, children of the same sex are paired because most of the children of primary school age are quite shy. For the same reason, younger children prefer to be tutored in private and not in front of their peers. In this form of cross-grade tutoring, the teacher is the one who diagnoses the problem and will decide what individual assistance from an older tutor will correct it. Generally, she will schedule one to three sessions per week for that child. The older children cooperate with these requests, but they do not like to miss their own classes too many times, even if less important periods, like drawing, are used.

A program of monitorial instruction might work for subjects such as gardening, but most students feel that other students are not qualified to teach them, and they would rather have the class led by a professional teacher. Ancillary teaching sometimes is used in adult education. There was an "each one teach one" program, for instance, which was reasonably effective at the beginning, but some people began to use it for political purposes and it was abandoned. There still are college students who volunteer to go to the villages and teach children who no longer are in school.

Perhaps the most desirable kind of in-class cooperation program would be to use brighter children in the class to tutor the weaker ones. Older children might do this better, but it is difficult to arrange to borrow children from higher grades. The tutors should work under the direct supervision of the teacher and use materials the teacher has obtained or prepared for this purpose. Letting the tutors plan their own activities and develop their own materials would not be as satisfactory. Educators have an objective to accomplish through education, and a good teacher can provide the direction that a child made responsible for the teaching could not be trusted to discover on his own. The emphasis of such a program should be on the learner and not the tutor. A brighter child could help someone having difficulty during a seatwork exercise, for example, by demonstrating what was supposed to be done, and by correcting errors. If the tutor could not overcome the problem, he could report it to the teacher so she could give the help that was needed.

Within a class, most children would work for recognition alone, perhaps in the form of ribbons. They would not expect any sort of money reward. The best of all might be a book because the brighter children would really appreciate the opportunity to earn a book. The teachers could be expected to train their own pupils, but it might be helpful to give the pupils who would do the tutoring some kind of orientation, possibly in the form of a booklet.

The teachers should meet regularly with the tutors to make sure they are doing what they are supposed to be doing and to find out how the sessions are going. No special teaching materials would be required other than those the teacher would prepare or collect.

Institutional help in doing a project on children tutoring other children could be gotten from the Philippine Normal College. If the study was done in Manila, it might be best to work with the Division of City Schools in Manila. If it was going to be done in the rural areas, the group to work with would be the Division of Bulacan, which is a District that has a research capability and research experience with rural schools.

H. Korea

Educational Programs and Problems

Education in Korea is based on a three-tier system. Primary school covers grades 1 through 6, middle school includes grades 7 through 9, and secondary school offers grades 10 through 12. There are both academic and vocational secondary schools, with roughly half of the attending students enrolled in each program. Primary school teachers now are expected to be graduates of a two-year, post-secondary normal school program. Before 1962, however, a primary school teaching certificate was earned at a three-year teaching-training institution which followed graduation from middle school. Roughly one-third of those now teaching are normal school graduates. At present, it is estimated that over 95 percent of all age-eligible children are enrolled in primary school, over 70 percent in middle school, and over 40 percent in secondary school. Virtually all those who begin primary school continue for the full six years.*

Class hours for primary pupils vary by grade. The first two grades attend school for four hours a day, grades three and four receive five hours of instruction each day, and those in grades five and six are in school six hours per day, from 8:30 to 12:00 and from 1:00 to 3:30. Classes are in session five and a half days per week, and the school year consists of two nineteen-week semesters. Attendance in primary school is now compulsory, and government-enforced attendance also will be true for middle school sometime between 1978 and 1980. The primary school program includes Korean, arithmetic, social studies, natural science, art, music, physical education, and "public ethics," which teaches morality, cultural traditions, and anti-communism.

Metropolitan schools accommodate 35 percent of the nation's primary pupils. In fact, some 22 percent of all students reside in the Seoul area alone, and the remaining 13 percent live in other major cities. A typical metropolitan primary school has 40 to 50 classrooms for six grades, with the same number of teachers. Shift schedules no longer are in use. While classes often numbered 100 or more in the past, they now consist of 60 to 80 children per room. Students are expected to purchase their books, but the government will provide texts for those who cannot afford them. Boys and girls attend school together in the lower grades but attend separate classes within the same school in the upper primary grades. Ability grouping is not practiced. Teaching methods consist mainly of lectures although there is some recitation and, in the higher grades, some discussion. Seat work, which used to consist mainly of copying lessons from the chalk board, now is devoted primarily to doing problems, completing exercises, and writing themes. Teachers, roughly two-thirds of whom are female, are responsible for all subjects taught to their class. Metropolitan schools tend to be well-built structures with ample furnishings, and typically contain equipment such as elementary laboratory apparatus.

---

*Ministry of Education, Republic of Korea. Education in Korea - 1972.

Rural schools are attended by about 55 percent of the primary school children in Korea. A typical rural school has six to twelve classrooms and, like its counterpart in the metropolitan areas, is well built and well equipped. Some 40 to 60 students will be in each class. Teachers in the rural schools tend to be younger than those in the cities and, therefore, better trained but less experienced. Only those teachers who already have professional experience are accepted for positions in the metropolitan schools. Although improving, achievement among rural students has tended to fall below that of urban students. Until a few years ago, when the requirement for passing an examination to enter middle school was dropped, many rural families made considerable efforts to get their children into metropolitan schools where the passing rate was considerably higher. It is felt, however, that past and present differences are not due so much to the quality of teaching as to differences in home backgrounds and level of parental education.

Remote island and mountain schools provide about 10 percent of Korea's children with primary education. A few of these schools have but one room for 15 to 20 students spread over the six primary grades. Others are two-room schools with one teacher responsible for the first three grades and the other for grades four through six. Most of these schools, however, have three rooms, with an average of 10 to 20 students per teacher. The remote schools follow the same syllabus as other schools and use the same materials. Less content tends to be covered, however, because the teacher must divide the available time among several grades. Distance to school is not a problem in that farmers and fishermen traditionally live in hamlets, and the school is likely to be only a short walk away.

In the past, teachers were highly respected, but their status gradually has gone down as more and more teachers face economic difficulties due to low salaries. Students, however, still maintain their traditional deference to teachers and rarely feel free to express their own ideas. Most students are eager to learn, and parents also value education, but those in rural areas do little to help their children. Teachers are well aware of the problems of individual differences but, because of class size and the amount of extra effort it would entail, are reluctant to give children who are falling behind the individual help they need. As a result, perhaps, at least a third of all primary children have some difficulty reading, eventhough Korean is not regarded as a particularly difficult language and there are no vernaculars to be overcome. At least 1 percent of the children in the upper primary grades cannot read at all. Urban children tend to read at home for enjoyment, but rural children rarely have access to books aside from their texts.

A typical teacher in Korea earns about 40,000 won per month (or about $1,200 U.S. per year). As a comparison, a secretary will earn about 20,000 won per month ($600 U.S. per year). An unskilled worker will earn perhaps 1,000 won per day, or the same as a secretary. In the rural areas, a child would not expect to be paid for an errand, even a time-consuming one. Helping an older person would be a privilege, and the accomplishment itself would be satisfying. In the cities, however, at least 100 won (25 cents U.S.) would be expected. Money has become an overriding factor in the metropolitan areas and has tended to mold the goals of students as well as create dissatisfaction among teachers.

The problems faced by those concerned with primary education in Korea tend to reflect financial concerns as well. One problem reported was that teacher pay, particularly for younger teachers, was too low to keep them in the profession, and as many as 10 percent of the recently graduated teachers will leave education for the private sector. A second problem was the difficulty of dealing with very large classes, a problem which makes any improvement in the quality of education difficult. A third problem is that teachers are responsible for many auxiliary duties which detract from their instructional functions. There are large numbers of forms to be completed, and the government expects its teachers to take the initiative in leading community development projects such as cleaning streets and planting flowers.

Some of these problems were evident in visits to urban and rural schools. During an urban school visit it was learned that teachers must remain at their schools until 5:00 in the afternoon, long after the students have left. In one school, it was reported, an after school remedial class was begun but soon was cancelled because the teacher wanted extra money for the additional duties, even if they were performed during his expected work day. The parents recognized their children's need for help but were unwilling to pay the teacher privately because they considered the extra money to be the school's responsibility. The school was unwilling to pay both because no funds were available for such purposes and because it was against government policy. So the teachers decorate their rooms, carry out school beautification projects, participate in community development programs, and fill out report forms in the late afternoons while the children who need help don't receive it. Additional sources not associated with this survey confirmed this attitude on the part of urban teachers and added that, while against all regulations, several of these teachers were known to offer private instruction in the evenings to groups of five or six children from wealthier families. A diligent teacher, it was reported, could more than double his income with the additional 30,000 won ($75 U.S.) he could earn this way each month.

During a rural school visit, the problem of the need for individual attention became strikingly clear when several children sitting in the school library were asked to read aloud from the text and storybooks in front of them. This was reported to be an "activity day" at the school, which is one day each week set aside for sports, projects, and other activities not normally provided for in the regular school schedule. These students, presumably, had chosen to go to the library to read on their own. One child, a fifth grader, who was asked to read could not, and yet it was learned that this child regularly had been promoted each year, as are all Korean pupils, despite his deficiency. Furthermore, most of the information about him came from a classmate, and it was not at all clear that either his teachers or the school principal was fully aware of his problem. This may have been an isolated case, but it is consistent with the large percentage of students with reading problems noted earlier.

Students as Teaching Resources

Although practices such as individualized tutoring, peer teaching, and even remedial instruction are not common to Korea, the teachers and students seem willing to accept new approaches. Of all the models, however, cross-grade tutoring seemed the one best suited to their educational needs. In-class cooperation already occurs to some degree because many teachers try to pair up brighter with weaker children when assigning pupils to the standard two-person benches to allow the brighter child to serve as a model for, and give assistance to, the weaker one. It is understood that the better student will offer help or explanations if these are needed, and the two children will check each other's answers to problems and assignments. Some teachers even form small groups of students for this purpose around a nucleus of one student who is especially bright in one particular subject. Monitorial assignments also are made on occasions when a teacher has to leave the room. One child will be chosen to maintain discipline and perhaps supervise seatwork while the teacher is gone, but they never are given instructional duties. Because of the high attendance in the primary grades, ancillary instruction is not thought to be needed at this level. However, middle school or high school students sometimes conduct educational programs for elementary pupils outside of school as one of their community development projects.

One approach to cross-grade tutoring that could be tried would be to establish a tutor-based remedial system that would operate after normal school hours. If 10 students out of the 70 in a lower primary class needed help in reading, for example, 10 older, brighter students could be recruited to help them for an hour each afternoon. If the request came from their own teacher or the principal, it is felt that most students who were asked would gladly volunteer. It would be unthinkable for the tutors to expect pay for helping a fellow student, at least in the more traditional rural areas.

Recognition would be reward enough. As for the children who needed help, their assignment to a remedial group would be embarrassing, but they would accept the teacher's decision because the opportunity to learn will be regarded as even more important. Their parents would feel the same way. Such a system should operate all year because a temporary or short-term program could prove damaging to students who were dependent on help. Although some children might need only a brief amount of assistance to overcome some difficulty, and althought all children probably could profit from help at one time or another, the same children are likely to need tutoring throughout most of the year.

While special materials for the tutor's use would not be required, it would be advisable to have some additional materials, such as a special workbook, which the tutor could choose to use if he did not have the time or skill to devise his own. Most of the instruction would be based on the younger child's regular text assignments and classroom exercises, however, which would be reviewed during the tutorial sessions. The tutors could be asked to prepare materials, but this would not always be feasible since the tutor would have his homework to complete and other things he would want to do. It would be better for him to spend his time tutoring than preparing materials. Teachers could provide whatever overall supervision was needed, since this would not interfere with their correcting papers or filling in forms after normal class hours. If possible, the tutors should be changed regularly so the program was not a burden on any of them. This would work out in practice because each tutoring session should focus on only one problem, such as reading, and different children would be qualified to be tutors in different subjects.

The response of teachers to this program would be mixed, and would depend on how it was presented to them. Some teachers would not like to ask for help for their students because they felt it reflected on their own teaching skill. Others would recognize that the tutor's methods were very different from those that could be used in the classroom, and that the tutor was doing something that most teachers would like to do but did not have the time for. This program would give each child who needed it five extra hours of individualized instruction each week, something the teacher couldn't possibly accomplish. It should be made clear that the tutors would not "teach," but only review assignments and explain mistakes. Everyone would feel that a professional teacher always will be better at teaching than any ten-year-old. The tutors, too, would definitely benefit from this program. They would have experience in solving problems and learning to work together with someone else. In the long run, they also would profit from attending classes in the upper grades where the students were not as diverse as they are now, because problems would be kept from cumulating year after year. The learners would be helped most of all, of course, even from just having someone to ask questions of. Right now, there are too many in every class who need help and too few who can give it. Even the brighter students in the lower classes could profit from the program if they missed a class, did not understand some specific point, or had some other specific problem.

Assessing the outcomes of this kind of program would be difficult, particularly for affective changes. Collecting data on the behavior of the children from either their teachers or parents would not produce very accurate results. These are the kinds of problems being faced by the Korean Educational Development Institute, which would be the most appropriate institution to work with on a program of this sort. Other possibilities would be the Korean Institute for Research in the Behavioral Sciences, although they focus mainly on problems outside of education such as industry, and the Central Educational Research Institute, although they are more oriented toward educational administration, curriculum and teacher training. KEDI already has a network of 45 experimental schools and has a staff of some 50 professionals who work on research and developmental projects.

VI. CONCLUSIONS FROM THE SURVEY

It should be clear from the preceding sections of the report that no one approach to using students as teaching resources clearly is superior to all others, and that no one model can be regarded as overwhelmingly more appropriate as a potential means of alleviating existing educational deficiencies in the developing countries. Nevertheless, there are a number of areas in which a consensus does exist, and the identification of these commonalities will permit narrowing further attention to those opportunities and constraints which are likely to have a significant effect on any peer tutoring or teaching program in an underdeveloped nation.

1. Acceptability of the Models

To begin with, the various programs reviewed here in the United States largely were designed to cope with problems, such as the failure of traditional educational practices to overcome the disadvantages of the urban ghettos, which are not necessarily consistent with the difficulties faced by most developing countries. Yet, some use of students as teaching resources is an informal practice in almost every country referred to in the survey. The adoption of more systematic programs may be limited in some countries by various constraints, such as the unavailability of upper primary grade tutors during the period preceding their secondary school entrance examinations, the view that students are not reliable sources of information, or the lack of space in which to add tutors to most classrooms. Nevertheless, none of these problems seemed so severe as to preclude further consideration of any of the models that were presented.

Probably any of the four models described earlier in this report could be made to work in any of the countries surveyed. And, since these four models were chosen to represent the range of models that might have utility in the developing countries, it is clear that almost any model which did not depend on radical changes in the educational system or require the preparation of vast amounts of supporting materials could be implemented.

2. Variability in Requirements

The countries surveyed differed considerably in the problems which appeared to be interferring with improvements in their programs of primary education, in their choice of areas where they would like to see new resources applied, and in their basic educational philosophies with respect to what constitutes effective teaching. For example, only one third of the elementary school teachers in Viet Nam can be viewed as minimally qualified, while there is a yearly surplus of thousands of teachers with university degrees in the Philippines. Some countries, such as Korea, have high expectations that children will continue on in school beyond the primary grades while others, such as Indonesia, feel no critical need to have most children learn more than can be offered in a traditional primary program. The teaching practices in some countries, such as Ghana, focus almost exclusively on the brighter children while elsewhere, as in Thailand, it is the weaker children who are expected to receive the most attention. There is considerable variability among the developing countries in their needs and aims and, as a result, the same program would not be suitable everywhere.

No one model for using students as teaching resources emerged as clearly the most suitable for a majority of the countries participating in the survey. Each of the four models was selected by the informants from at least one of the eight countries as the most promising in their view, and several felt that two or more of the models could be utilized. On the other hand, even when the same general model was chosen, it was clear that the resulting program would likely vary from country to country in many important details.

3. Program Emphasis

Although the findings from studies done in the United States suggest that gains for the tutors might be substantially greater than those expected for the learners, the educators interviewed in the developing countries almost uniformally were far more concerned with the probable impact of a program on those receiving assistance than on those giving it. Oversized classes, underqualified teachers, inappropriate materials, shared teachers and shortened school days due to shift arrangements all are recognized as factors which limit learning opportunities within the classroom. Improvements in the performance of the tutors, both academic and social, would be desirable, but a program would be sustainable only if it produced tangible benefits for those children who were being taught by other students. The impact need not be direct, and could result from programs which permitted the better use of the professional teacher's time, but it would have to be in the form of improved achievement for the learners.

In light of their needs and preferences, the developing countries are far more likely to have an interest in programs which aim toward gains for the learners than those which would result in gains for the tutors. In most countries included in the survey, in fact, there would be an evident distrust of the use of students as teaching resources by the teachers, the parents and even the students receiving the instruction which would have to be overcome. Academic gains for the tutors, and social gains for either the helpers or those being helped, tend to be regarded as secondary issues.

4. Degree of Structure

In spite of this emphasis on how much more would be learned by those receiving the instruction, use of the highly structured systems created in the United States for just this purpose does not seem to be suitable or acceptable for many of the developing countries, at least at the present time. Even where underqualified teachers are the rule, programs which depend on the tutorial process as the primary source of instruction for all children represent too great a divergence from present practices to afford much hope of acceptance. Regardless of the type of model felt to have the most promise, there as a distinct preference for programs which are fundamentally informal, teacher supervised, and supplementary to traditional classroom teaching. This concern did not relate to the need to develop and make available a supply of whatever new materials might be required but, instead, to the downgrading of the role and responsibilities of the professional classroom teacher. Students tutoring students is seen as a teaching technique, not the teaching technique.

The direct transfer of existing, highly structured programs which make use of students as teaching resources as the primary vehicle for the learning of all children is not likely to be accepted. Program which provide the classroom teacher with the option of determining who will receive help, who will give it, and what kinds of help will be given are apt to be much more tolerable. Only where educational opportunities were completely lacking would programs that did not depend on a teacher be welcomed.

5. Problems to be Overcome

In general, physical and financial constraints which cannot be overcome by the use of students as teaching resources will prevent this approach from radically expanding the quantitatively limited opportunities for education that now exist in most developing countries. Programs which use students to teach other students will not result in adding children to most classrooms, increasing the number of years of education typically received, or materially lengthening the school day. Nor will these programs diminish the effects of more fundamental problems such as the lack of relevance in what is taught, the adequacy and availability of curriculum materials, and the attitudes of many parents toward education of any kind. On the other hand, the use of students as instructional resources represents a significant opportunity to realize more effective results from the time, money and effort already being invested in education by increasing learner practice, by heightening individualization, by expanding remediation and by making better use of the skills, knowledge and energies of available teachers. Considering what now is being accomplished by the schools in most developing countries, these contributions alone are more than worthwhile.

The adoption of a system utilizing students as teaching resources will not radically change the numbers of children who are exposed to education or the number of years they can attend school. On the other hand, these systems can expand the amount of education obtained by making learning faster, easier and more reliable than it now is. As a result, much more will be accomplished by the better use of already existing facilities and personnel.

6. Benefits to be Achieved

Just as simply expanding the numbers of children in a classroom cannot be considered an improvement in education, merely assigning students to instructional roles is not likely to benefit anyone's learning. A well designed program has to do more than replace unqualified paid teachers with unqualified teacher surrogates. As the products of a system which uses students to help teach, a number of gains can be expected. First, the children who receive assistance should average higher achievement as a function of their participation. Second, the frequency of non-promotions should be reduced. Third, the impact of individual differences in age, background and aptitudes should be lessened. Fourth, students given the opportunity to teach should gain in their ability to use the knowledge they have and should expand it by helping others learn. Fifth, the interest of all participants in learning should be increased by its having been made easier, more exciting and more responsive to their particular needs. And sixth, the experience of working together and helping each other should produce lasting effects on cooperative efforts and social relationships.

The benefits which could be sought through programs based on the use of students as teaching resources include improvements in learner achievement, grade repetition rates, within class differences, tutor attainment, interest in education, and social attitudes. Not all of these benefits necessarily would be accomplished within a single program, but the opportunity to produce gains in each of these directions could be created by the use of any of the models.

7. Applications of In-Class Cooperation

The informants from several countries felt that some version of the in-class cooperation model would be useful in their countries. In Indonesia, for example, many students already work together on homework assignments after school. By giving them training in how to study together, and by giving them materials to use for this purpose which were better than the texts they now have, greater benefits could be realized from these informal, after school activities. For the Philippines, it was suggested that brighter children could help their classmates if this was done under the direct supervision of the teacher and with materials the teacher would provide for this purpose. Students who helped others could be rewarded with ribbons or a book. The in-class cooperation model would not be acceptable in some of the other countries, however. In Ghana, for instance, it was felt that such a program would involve very substantial changes in the way children are taught, and that teachers would be unwilling to try it. In Thailand, it was expected the teachers may be incapable of managing the system, especially for large classes. And in Nigeria, there would be the criticism that the better students always were giving help while the poorer students always were receiving it.

In-class cooperation, even where regarded as potentially beneficial, did not seem to be either a good use of class time or an easily manageable program. In no country was the need for more practice than normally occurs in a teacher-led classroom felt to be pressing enough to risk the playground-like confusion that could result. Having students work cooperatively within the classroom does not fit easily into present classroom routines, and substantial revisions in these routines would be needed to make extensive use of an in-class cooperation model.

8. Applications of Cross-Grade Tutoring

Programs based on cross-grade tutoring seem to be preferred where the need for greater opportunities for remediation are required. The Thai feel this could be done outside of regular school hours, so the tutors would not miss any of their own classes. They suggested having the teacher choose tutors from among the very best students that she taught during the previous year, and letting the weaker children structure the sessions by requesting the help they want. In Nigeria, the sessions could be held during normal school hours because the tutor could miss unimportant classes or those he already was advanced in. In Korea, however, it also was felt the program would work best outside of regular class hours. In all three countries, informal tutoring was suggested in contrast to having the tutor "teach". Informants from Ghana, Sierra Leone, Viet Nam and the Philippines felt older students would resent being recruited as tutors because it would take time away from their own studies and their preparation for exams.

Cross-grade tutoring is desirable, but mainly for remedial assistance and no encouragement was received for including this kind of instruction as part of the regular school program in order to increase individualization. Tutoring was felt to be valuable where traditional group methods had failed, but this model was not assumed to have sufficient potential for all students to devote class time to it as a substitute for lectures, recitations or seatwork.

9. Applications of Monitorial Instruction

The use of monitorial instruction already seems widespread in many of the developing countries where grade, ability or convenience groupings exist in the classrooms. This is the case in Sierra Leone, for example, and in Indonesia. Educators from both of these countries felt it would be best if the monitor focused mainly on supervising practice exercises and being an aide to the regular classroom teacher. For Ghana, it was suggested that children could take turns preparing lessons for their classmates so they all could derive benefits from this activity. However, the lesson would have to be presented under the teacher's supervision so that the other pupils and their parents would be sure of the lesson's accuracy. Concern over the likely capability of the monitor also was voiced with respect to installing such a program in Viet Nam, Thailand, and the Philippines. The possibility that a monitor might be better at instructing other children than their own classroom teacher generally was rejected.

Monitorial instruction is considered to be a practical and useful means of assisting teachers in grouped classrooms, but the monitor would be expected to make the teacher's tasks easier rather than the students' learning better. He would not be assumed to have sufficient skill to take a more active role in the teaching process, nor would it be likely that he would be given any freedom in determining how the lesson was to be taught.

10. Applications of Ancillary Teaching

Almost all of the informants interviewed contended that sufficient spaces were available to accommodate all of the primary aged children who wished to attend at least the first few years of school. Distance to the nearest primary school, poverty, and the need to help out at home were conditions which presumably affected some children, but never a very significant percentage of them. As a result, and because of other, existing programs which dealt with these problems, it was reported that there was no real need for ancillary teaching in Ghana, Sierra Leone, Nigeria, Thailand, Indonesia, or Korea. Only in Viet Nam was it felt that there were enough children who were not enrolled in school for reasons other than preference or interest to make a program of using students to teach other children in the evenings worthwhile. Whether the need for easier access to school is

BEST COPY AVAILABLE

indeed a problem that no longer exists in most countries, or whether educators are reluctant to attribute non-attendance to other factors than parental disinterest, it seems clear that an ancillary teaching program would not be given enthusiastic consideration.

Ancillary teaching is appropriate only where it is recognized that many children are not attending school but would welcome the opportunity to learn, even from a volunteering primary school student. Despite enrollment rates as low as 60 percent in the lower primary grades among the countries surveyed, it generally is not felt necessary to create additional instructional opportunities outside of their regular school systems.

11. Planning a Program

The substantial literature reporting projects conducted in the United States on the use of students as teaching resources rarely is concerned with the same goals and circumstances that are likely to be encountered in the developing countries. On the other hand, this literature often does identify what is feasible, and it does contain a substantial number of suggestions for enhancing the likely success of any program. For example, most practitioners agree that an age difference of three years between a tutor and tutee in a cross-grade program is necessary if the older child is to serve as a model for the younger one. Training for students who take teaching roles, particularly to the extent it contains role-play exercises, seems to be an important requisite and one which cannot be left exclusively to the classroom teacher. Programs can fail, as did the early projects in Michigan, Connecticut and New Jersey on the use of aides in the classroom, because of misconceptions on the part of teachers, parents, students, administrators or the participants themselves. An unstable curriculum can diminish the potential contribution of an older student who is not familiar with the new content or methods. The use of contingency management techniques may convert an otherwise mediocre program into one that is eminently successful.

Programs developed in the United States, while often addressed to different problems and conditions than those which should be the focus of an overseas project, nevertheless represent a substantial source of useful experience and ideas. It would be unwise to plan a project to be implemented in the developing countries which represented a radical departure from approaches which are known to be feasible and which have achieved at least some operational success in this country.

12. Implementing a Program

The preponderance of underqualified teachers, inadequate local supervision, and fixed community expectations in many developing countries will have to be taken into account when a program is installed. Resistance and inflexibility toward educational change may be more pronounced there than it is where there is greater recognition of existing deficiencies, as in many disadvantaged neighborhoods. The attitudes of everyone concerned will have to be taken into account, as will the space, materials and supplies that would have to be available for the program to operate. In many of the countries surveyed, children sit three or four to a desk, share texts and pencils, and find it difficult to hear because of noise from an adjacent classroom. Printing, audiovisual services and transportation within rural areas may be virtually non-existent. Concepts such as summer programs, inservice teacher institutes or parental participation rarely can be considered practical. Systematic data collection may entail the services of far more sophisticated individuals than are likely to be available, particularly in rural areas. The continuous participation of locally based collaborators would be needed to anticipate these problems and to help devise solutions which are within that country's ability to install and sustain.

Because of the many kinds of specific problems which may have to be overcome, the participation of a local institution probably will be essential to the successful implementation of a program using students as teaching resources. At least one organization exists within each of the countries surveyed which has the capacity to assist in planning, installing, evaluating and disseminating the findings of an experimental program, and the cooperation of such an institution should be an integral component of project plans.

13. Maintaining a Program

Educational advances are occurring rapidly in many developing countries, as in Ghana where the percentage of unqualified teachers in the primary schools is expected to be reduced from about 60 percent in the 1967-68 school

BEST COPY AVAILABLE

year to zero by the end of the 1975-76 school year. The construction of modern school buildings in Viet Nam, the likely establishment of a regional textbook printing plant in Sierra Leone, and the planned introduction of instructional television in Korea suggest that projects which are conceptualized only as stopgap remedies may be short lived. A program which emphasizes temporary gains rather than more permanent improvements is not likely to result in the very fundamental gains that have been achieved only after a system has become institutionalized through several years of incremental operation. Continuous monitoring of a program will be required for an extended period, not only to prevent decay once the freshness has worn off, but to help the program accommodate to new conditions brought about by subsequent reforms.

Concern should be given to the maintenance of the program and the many potential advantages of using students as teaching resources which go far beyond the immediate problem of remedying current deficiencies in the educational systems of developing countries. A failure to plan toward these more desirable benefits may inhibit their realization and leave the program unable to cope with any future change that may affect its operation. The goals of the approach should not be lost sight of because of concern over the means.

14. Concomitant Innovations

The use of students as teaching resources permits consideration of a fairly sizable number of educational innovations which would not be necessary to its success, but which would be made feasible by a program of peer tutoring. In a traditional classroom, teachers often are limited by the size of the class in terms of what kinds of techniques they can employ. They cannot use other techniques which are only possible or practical when instruction is individualized or personalized to the extent it can be when students are used to teach students. The use of contingency management, for instance, depends on fairly continuous opportunities to observe and reward the work of individual children, often according to a prescription designed separately for each child. Continous progress schemes such as those proposed for the Philippines easily can get out of hand without adequate monitoring. Some materials, like Montessori kits or Cuisenaire rods are used properly only when the students are encouraged to use their own initiative and work indepently. On the other hand, techniques such as the inquiry teaching method depend upon group participation and management by a skilled teacher for their success.

It is important that a program of peer teaching both take advantage of other educational innovations made possible by its introduction and, at the same time, not preclude the continued use of methods and materials which have been successful in that country's schools. An investigation of the use of students as teaching resources should not be limited to traditional educational materials and methods when one of the benefits of this approach is that it permits the introduction of otherwise unworkable ideas.

15. Appraising Cost-Effectiveness

Many studies which have been conducted to test the efficacy of students as teaching resources, both here and overseas, have noted the low unit cost of using volunteering students in teaching roles. Establishing the appropriateness of even these small costs, however, must include an assessment of the benefits they resulted in, and the probable cost of achieving similar benefits through alternate programs. These are difficult dimensions to measure, but nevertheless are important aspects to consider in evaluating a program's success. Furthermore, gains in achievement and social confidence are not the only outcomes of a peer teaching project that deserve attention. Any new system which permitted the assignment of more children to each classroom, the more rapid progression of students through the school system, the widespread use of less qualified teachers, a decrease in wastage due to fewer non-promotions and dropouts, the more efficient use of school buildings and other educational investments, or the creation of new educational opportunities where none previously existed are benefits which have a distinct value in underdeveloped countries even if achievement remains constant. On the other hand, the results derived from a program necessarily are relative to other uses of the same resources. Almost any of the goals already cited might be more economically achieved through more extensive in-service training, new classroom materials, better supervision at the local level or other means.

The need to assess the cost-effectiveness of any peer teaching program, particularly in realtion to the equivalent allocation of resources for the implementation of alternative approaches, must be recognized. The direct costs of implementing and maintaining a program using students as teaching resources are not as significant as the relationship of these costs to the benefits derived in terms of established national priorities and competing options for improving educational outcomes.

10. Maximizing Probable Impact

The design of a demonstration project on the use of students as instructional resources in the developing countries must focus on achieving results which represent a major impact and which go beyond the attainment of simple statistical significance. The problems which need to be overcome are too massive to be approached with a study that, even if fully successful, would not be viewed as more than one small contribution to educational technology. The credibility of peer teaching as an innovative instructional tool will depend upon outcomes that are both replicable and highly visible. In all likelihood, this means some risk will be incurred in carrying out a project which is presented as one with considerable promise but one recognized to have reservations that the expected benefits may not be fully attained. The risk of either a fully successful outcome which is not of an impressive magnitude or a failure to attain a hoped for breakthrough can be minimized by realistic levels of support and longevity for the pilot program.

The probable impact of a project which introduces the use of students as instructional resources can be maximized by selecting a program that holds forth the promise of making a truely meaningful contribution, and by making an investment in it which is commensurate to the probable payoff. A moderately risky program is preferable to one which aims at only modest results since either, if successful, could be replicated elsewhere at about the same cost.

VII. SUGGESTED RESEARCH DESIGN

A hoped for purpose of this survey was to arrive at a definitive research design for use in investigating one or more uses of students as teaching resources in the developing countries. This design was expected to represent a synthesis of the approaches already being implemented in the United States and the predilections of the educational community in various developing countries. As made clear in the preceding sections of this report, however, none of the surveyed programs already developed for use in the United States has more than very narrow applicability overseas because of differences in underlying emphasis, target population and formality of structure. At the same time, there was little agreement among the educational researchers interviewed during the overseas visits as to what kind of model would have the greatest overall value to them, considering the problems being faced and the resources already available in each of the countries.

One major cause of this indefinative outcome probably was that the focus of the inquiry was directed at finding problems to fit an attractively promising solution rather than at identifying alternative solutions, peer teaching among them, capable of remedying some pressing deficiency. This inversion seems to be characteristic of a considerable amount of educational research. Innovations are devised, implemented and evaluated only to discover that some other approach, while perhaps less provocative, would have been at least as effective, economical and generalizable. Out of deference to this more constructive philosophy, and in light of the inconclusive findings arrived at through the survey, the research design to be described is one which focuses on a problem area where it is highly likely that the use of students as teaching resources will be one of the components of any reasonable solution, and where that solution is likely to have substantial and immediate value.

The problem selected as the one most appropriate issue to be dealt with in the research design is that of making effective education possible in schools where overly large classes are assigned to each teacher. This condition was one of the more frequently cited problems of the developing countries, along with their need to depend on large numbers of underqualified

BEST COPY AVAILABLE

teachers and their lack of a sufficient supply of appropriate teaching materials. Although these last two issues may be equally pressing, and be as responsible for educational deficits as overcrowded classrooms, their solution is much less likely to be achieved through a peer teaching program. Nevertheless, these accompanying problems undoubtedly exacerbate the consequences of too many children to be taught at one time and need to be considered in the design of a realistic solution. The following research design has been derived to accomplish these aims.

Objective

Design a comprehensive system for alleviating the consequences of overcrowded primary classrooms typical of most developing countries which incorporates the use of students as teaching resources.

Purposes

The principal aims of this research are to create a system which uses students in instructional roles, and which is:

1. workable in practice, considering the other limitations on primary education in most of the developing countries, such as their dependence on underqualified teachers and their inability to make available sufficient classroom materials;

2. capable of producing sufficiently outstanding gains in the achievement of the learners to insure the uninterrupted continuation of the program after external assistance in withdrawn;

3. suitable for rapid implementation in other developing countries facing similar problems and without more than a minimal requirement for external assistance; and

4. cost-effective in relation to the probable allocation of resources that would be required to implement alternative solutions directed at the same problems.

Some additional aims of this research, which are to be regarded as supplemental to the principal aims, are that the system which is devised will:

5. produce demonstrable achievement benefits for those students who

teach or tutor other children as a function of their participation;

6. result in measurable social benefits for all participants, including increased self-confidence for the helping students, more rapid social growth for those receiving learning assistance, and a tendency toward the development of "helping relationships" among all students and their teachers;

7. permit the better use of existing resources in terms of number of children per classroom, speed of progression through school, use of unqualified teachers, reduction in "wastage", utilization of educational investments, or creating new educational opportunities; and

8. establish which components of the system (e.g., materials, training, scheduling) are essential to the system's success in terms of the specific benefits that can be attributed to the program.

Approach

The overall approach will be to incrementally implement an eclectic system for improving instruction in overcrowded classrooms through the use of peer teaching and other innovative techniques on a trial basis in one lesser developed country, to progressively test this system as it is refined and expanded to more schools, and to then implement adapted versions of this system in at least one or two other countries on the basis of this experience to demonstrate its generalizability. The main features of this approach are that the system will be:

1. Designed to result in a substantial impact on qualitative and quantitative educational opportunity in terms of highly visible and clearly meaningful results; the task is not to demonstrate that the use of students as teaching resources or other innovations can be made to work in the developing countries, nor to establish that their measurable contributions are statistically significant, but to find and develop realistically encompassing solutions to the problem of providing an effective education in classes containing large numbers of students.

2. Developed incrementally through continuous monitoring, the progressive refinement of approaches already implemented, and the addition of new approaches to meet with identifiable opportunities for further improvement; it is neither necessary nor desirable that the system be developed

fully before its initial implementation, or that the research emphasize an experimental test of an intact, preplanned system; there should, however, be an overall plan for system development which generally characterizes the innovations to be introduced, the sequence and schedule for their introduction, and the interim targets to be achieved at the end of specified periods.

3. Documented thoroughly through the use of logs, records and frequent assessments of the main variables to permit the contribution and impact of each innovation to be established, and to allow the program to be adapted and replicated elsewhere; documentation should be prepared on all aspects of the program, such as tutor selection and training, attendance, materials developed or used, time spent in student taught activities, teacher receptivity, parental attitudes, demonstration and dissemination initiatives, and so forth.

Statement of Work

In Phase One of the project, the following tasks should be performed:

1. Identify a lesser developed country, and a particular location within that country, where overcrowded primary classrooms are typical, where permission to do research on new approaches for instruction can be obtained from the Ministry and other relevant authorities, and where no other programs which might substantially influence project outcomes are underway.

2. Secure the cooperation of an in-country institution which is capable of assisting in the planning, conduct and evaluation of the project, and which is prepared to aid in the dissemination of the findings and the expansion of the program within the country should it prove successful; this local institution should be selected on the basis of having a staff which can assist in overcoming language barriers, in identifying local conditions which are likely to interfere with the outcomes of the program, in conducting on-site observations and evaluations, and in anticipating cultural, logistic and administrative problems; orientation and training should be given to the participating staff in the methods being investigated and the assessment instruments that will be used.

3. Collect base-line data on two or more primary schools at that location; these data should include, but not be limited to: class size,

student achievement, pupil attendance, percentage of children in school, parental attitudes toward school, distribution of the teacher's instructional time, availability and use of materials, extent of homework or self-directed study, frequency of teacher supervision, community characteristics, and other information needed to describe the student population to be researched and to establish definative improvement targets for the program; these data need not encompass students at all primary grade levels, although this would be desirable.

4. Specify the precise aims of the research, both qualitatively and quantitatively, in terms of hoped for outcomes which are readily visible, which represent meaningful increments in the education being received, and which reasonably could be attributable to the adoption of a teaching system which at least in part made use of students as teaching resources; and indicate what comparisons will be made to demonstrate the specific contribution of the program toward these aims.

5. Construct, try out, and administer objective tests and other measures relating to the outcomes selected as the aims of the research, including measures which will provide information on the workability of the system, its capability for producing achievement gains among learners, its requirements in terms of technical and material resources, and its costs; special attention should be given to measures of self-confidence, social maturity and helping attitudes if these are selected as aims for the program; parallel versions of some measures may be required.

In Phase Two of the project, which could begin before the first phase is complete, the following tasks should be performed:

6. Design a system of instruction which is capable of achieving the aims selected as the target of the research; this system is expected to incorporate, but not be limited to, the use of students as teaching resources, and can include the introduction of any, or any combination, of peer teaching models such as in-class cooperation, cross-grade tutoring, monitorial instruction or ancillary teaching; in addition, the system might include the use of other low cost innovations which were needed to permit peer teaching to be effective, or which could accompany a peer teaching program and result in meaningful improvements in instruction in overcrowded classrooms; the

BEST COPY AVAILABLE

cost of implementing and maintaining the system after its development, as well as the usual practical constraints on primary classroom education in typical developing countries, should be taken into account in the design of the system.

7. Develop the initial ingredients of the system so that their workability and potential benefits can be assessed in a preliminary way, implement these initial components, and conduct an assessment of their effectiveness; because long-term as well as short term benefits are sought, some of the measures used may emphasize enabling rather than final objectives, this assessment will serve as a basis for modifying the activities already initiated and for determining which of the system's remaining ingredients will have the greatest possible payoff and should be introduced next; priority should be given to getting the system to work as designed rather than to holding conditions constant for evaluative purposes.

8. Document each aspect of the program so that detailed procedures for implementing those components which have the desired effect can be communicated conveniently; these procedures should be concerned with all aspects of the program, such as gaining teacher cooperation, influencing parental attitudes, selecting and training tutors, devising materials for their use, recruiting volunteers for after school sessions, sustaining the motivation of participants, obtaining the necessary resources, meeting space and supervision requirements, determining the helper's responsibilities, and dealing with day-to-day problems; it also will be necessary to document insurmountable constraints, such as interference from national examination schedules, the failure of essential materials to arrive, or a change in the prescribed syllabus.

9. Monitor the entire school program to determine the occurrence of anticipated or unanticipated side effects which had not been included in the initial aims of the program, such as reductions in absenteeism, increased informal cooperation on homework assignments, better class discipline, improved frequency of personal reading or elective self-study, changes in the relevance of classroom content, higher utilization outside of school of what has been learned, and so forth.

10. Continue the development of the system through repeated cycles of design, implementation and assessment to progressively improve the

effectiveness of the ingredients already introduced and to add new ingredients which will further enhance the results of the program; during this step, efforts also should be made to expand the program to more classrooms, more grades or more schools as a means of testing the generalizability of the approach and the adequacy of the documented procedures.

In *Phase Three* of the project, the following tasks should be performed:

11. Evaluate the success of the completed program with respect to the aims established for it, and the side effects produced by it that have been identified; the evaluation should include comparisons both with the base-line data collected at the beginning of the study and with data collected from comparable schools not participating in the program, efforts should be made to separate out effects that may be attributable to various secondary ingredients, such as the conduct of supportive in-service teacher training programs, the adoption of more extensive classroom materials, or the addition of instructional time to the school day; the probable cost of replicating each ingredient should be calculated.

12. Insure the institutionalization of the program by creating a capacity for the continued expansion, evaluation and improvement of the program after technical assistance is withdrawn; the institution selected for this responsibility may or may not be the institution chosen to cooperate in the conduct of the research; this locally established capability should be sufficiently skilled to both refine the installed program and add new ingredients to it; as part of this step, efforts should be made to incorporate any required materials into the authorized curriculum, provide for budgetary allocations needed to operate and maintain the program, and insert the appropriate training into preservice teacher preparation courses.

In *Phase Four* of the project, the following tasks should be performed:

13. Disseminate the findings of the research, including descriptions of the procedures used and the results obtained, so that other underdeveloped countries can take advantage of the system; this step should include the development of appropriate in-service teacher training programs, the preparation and distribution of descriptive literature for the use of educational researchers and administrators, and the establishment of demonstration centers where the system can be observed in action; in disseminating the findings it

it should be noted which of the system's components could be used separately from each other, and which alternative components could be considered in the design of a parallel system.

14. Replicate the installation of some version of the system in one or two other countries; the purpose of this step is to test the generalizability of the system and to determine whether all of the components of the system have been identified in sufficient detail to permit them to be reproduced in other settings with roughly the same results; to the extent possible, technical assistance during this step should be limited to monitoring the program and to its evaluation; preferably, these replications should be conducted in other developing regions where somewhat different circumstances and problems are present.

Schedule

A five-year period of research would be required to complete this project. A shorter period could be considered, but on the basis of ongoing efforts to use students as teaching resources, it is expected that those who are participating in its day-to-day operation may require several years of experience with it before institutionalization is achieved. Furthermore, each cycle should initiate at the beginning of a school year to permit its full effect to be realized. The dividion of the five-year period would be approximately:

Year One: identify an appropriate host country (step 1), secure the cooperation of an in-country institution (step 2), collect base-line data (step 3), specify the aims of the research (step 4), prepare and administer outcome measures (step 5), and design the basic system of instruction (step 6).

Year Two: develop, implement, and assess the initial ingredients of the system (step 7), initiate documentation of each aspect of the program (step 8), begin monitoring for side effects (step 9), and start on the elaboration of the system (step 10).

Year Three: continue the preparation of documentation on the system (step 8), continue monitoring for side effects (step 9), and continue the elaboration and improvement of the system (step 10).

Year Four: continue with the activities of Year Three (steps 8, 9 and 10), carry out the comprehensive evaluation of the program (step 11), and take whatever steps are necessary to institutionalize the system (step 12).

Year Five: disseminate the findings of the research (step 13), and replicate the installation of the system in one or two other developing countries (step 14).

Management

The selection of organizations, groups or individuals to carry out this project will be an important factor in its success and, even more important, in the constructive contribution the results of this effort will have on alleviating a major cause of educational deficit in most of the developing countries.

Two general considerations are significant in identifying researchers to undertake this program. First, both organizational and individual competences are likely to affect the quality and outcome of this project. An organization generally can provide the depth of staff and services that are needed to insure the efficient use of research opportunities and the protection needed to minimize unforeseen circumstances. The conduct of the project, on the other hand, will depend heavily on the specific individuals assigned to it, and no amount of organizational experience can compensate for an inept researcher. Second, the kind and amount of technical assistance required to carry out this project will depend to a sizable extent on the capability of available resources within the host country and on the amount of assistance required. Some developing countries have substantial numbers of skilled research personnel who could be assigned to this project. In other countries, the expatriate research staff not only would have to carry the full research load, but would have to take responsibility for many complementary activities, such as orienting teachers and administrators, conducting routine observations, and training personnel at the institution which would be responsible for maintaining the project after technical assistance has been withdrawn.

As to specific criteria that are felt relevant to the probably success of a project on the use of students as teaching resources in the developing

BEST COPY AVAILABLE

countries, the following capabilities are considered significant, and they have been listed in approximate order of importance:

1. Sensitivity to the problems of primary education in the developing countries, particularly those brought about by overlarge classes which depend on underqualified teachers and insufficient instructional materials.

2. Awareness of cost considerations in the adoption of educational innovations by the developing countries, and of cost-benefit options and trade-offs that are likely to affect the utilization of new methods.

3. Familiarity with various approaches to using students and other non-professionals as teaching resources and with the strengths and weaknesses of each approach.

4. Knowledge of a broad range of educational innovations and instructional technologies that could contribute to the success of a project based on the effective use of peer teaching.

5. Ability to skillfully apply a systems approach for problem solving through the implementation of a series of iterative steps aimed at achieving practical and utilitarian outcomes.

6. Competence in the development, application and interpretation of valid and objective measuring instruments in both the academic and social areas of behavior.

7. Understanding of the process of, and problems associated with, materials development, teacher training, classroom management and pupil assessment.

8. Recognition of the importance of institution building and thorough dissemination in the developing countries, and skill in carrying out these responsibilities.

9. Capacity for planning long-term, large-scale projects, particularly with respect to making accurate time, staff and cost estimates.

REFERENCES

Note: Extensive bibliographies of research and descriptive literature on the use of children and other non-professionals as teaching resources can be found in Lippitt, Lippitt, and Eiseman (1971); Gartner, Kohler, and Riessman (1971); and in the forthcoming volume described in the Acknowledgments to this report being edited by Vernon Allen.

Allen, A. Children as teachers. *Childh. Educ.*, 1967, *43*(6), 345-350.

Bailey, J. S., Timbers, G. D., Phillips, E. L., & Wolf, M. M. Modification of articulation errors of pre-delinquents by their peers. *J. Appl. Behav. Anal.*, 1971, *4*(4), 265-281.

Bowman, G. W., & Klopf, G. J. *New careers and roles in the American school.* New York: Bank Street College of Education, 1968.

Bright, R. L. Tutors in the Vanguard System. *Impr. Human Perf.*, 1972, *1*(4), 39-42.

Bright, R. L., & Colosimo, J. A. *South Waco Elementary School report.* Waco: Western Institute for Science and Technology, 1971.

Chase, F. S., & Baker, J. E. Rural education today. *Chapt. IV* in Carroll, J.S., et al. *Education in rural communities.* National Society for the Study of Education: The Fifty-First NSSE Yearbook (Part II), 1952.

Cloward, R. D. Studies in tutoring. *J. Exper. Educ.*, 1967, *36*(1), 14-25.

Ebersole, E. H., & DeWitt, D. The Soto pupil-team program for reading: An experiment in structured tutoring. *Impr. Human Perf.*, 1972, *1*(4), 39-42.

Ellson, D. G., et al. *Programmed teaching.* Southeast Asia Ministers of Education Organization: INNOTECH Report, 1973.

Gartner, A., Kohler, M., & Riessman, F. *Children teach children: Learning by teaching.* New York: Harper & Row, 1971.

Gracey, D., & Houghton, R. Little kids teach big kids. *Instructor*, 1971, *81*(7), 116-117.

Hannam, C., Smyth, P., & Stephenson, N. *Young teachers and reluctant learners.* London: Penguin Books (England), 1971.

Harrison, G. V. *How to organize an intergrade tutoring program in an elementary school.* Provo: Brigham Young University Press, 1971.

Harrison, G. V. Tutoring: A remedy reconsidered. *Impr. Human Perf.*, 1972, *1*(4), 1-7.

Janowitz, G. *Helping hands: Volunteer work in education*. Chicago: University of Chicago Press, 1965.

Keller, F. S. "Good-bye teacher. . ." *J. Appl. Behav. Anal.*, 1968, *1*(1), 79-89.

Lancaster, J. *Improvements in education, abridged*. London: Free School, Borough Road, 1808.

Laubach, F. C., & Laubach, R. S. The role of the volunteer teacher. *Harv. Educ. Rev.*, 1970, *40*(2), 277-279.

Lee, Y. D., et al. *Interaction improvement studies on the mastery learning project*. Seoul: National University, College of Education, 1971.

Lippitt, P. Children can teach children. *Instructor*, 1969, *78*(5), 41ff.

Lippitt, P., Lippitt, R., & Eiseman, J. *Cross-age helping program: Orientation, training, and related materials*. Ann Arbor: University of Michigan, Institute for Social Research, 1971.

Lippitt, R., & Lippitt, P. Cross-age helpers. *NEA Journal*, 1968, *57*(3), 24-26.

Lutz, J. M., & Stuart, A. Sixth-grade aides for the kindergarten. *Chapt.* in Association for Childhood Education, *Aides to teachers and children (Bulletin 24-A)*. Washington: ACEI, 1968.

Mays, B. Teen-age aides. *Chapt.* in Association for Childhood Education, *Aides to teachers and children (Bulletin 24-A)*. Washington: ACEI, 1968.

Melaragno, R. J. Intergrade tutoring on a school-wide basis. *Impr. Human* Perf., 1972, *1*(4), 22-26.

Moore, W. G. *The tutorial system and its future*. Oxford: Pergamon Press, 1968.

Neidermeyer, F. C. *Parent-assisted learning*. Southwest Regional Laboratory for Educational Research and Development, Technical Report, 1969.

Neidermeyer, F. C., & Ellis, P. Remedial reading instruction by trained pupil tutors. *Impr. Human Perf.*, 1972, *1*(4), 15-21.

Riessman, F. Can schools teach children: What is stopping them, What is to be done? *J. Res. Devel. Educ.*, 1972, *5*(2), 83-90.

Rosenbaum, P. S. *Peer-mediated instruction*. New York: Teachers College Press, 1973.

Saettler, P. *A history of instructional technology*. New York: McGraw-Hill, 1968.

Snapp, M., Oakland, T., & Williams, F. C. A study of individualized instruction by using elementary school children as tutors. J. Sch. Psychol., 1972, 10(1), 1-8.

Strodtbeck, F., & Granick, L. The youth tutoring youth model for in school Neighborhood Youth Corps: An evaluation. (Final report, Department of Labor grant 42-0-005-034.) New York: National Commission on Resources for Youth, Inc., 1972.

Swett, M. This year I got my buddy to laugh. Childh. Educ., 1971, 48(2), 17-24.

Thelen, H. A. Tutoring by students. School Rev., 1969, 77(3), 229-244.

Tosti, D. T. The peer-proctor in individualized programs. Educ. Technol., 1973, 8(8), 29-30.

Woofter, T. J. Teaching in rural schools. Boston: Houghton Mifflin, 1917.

BEST COPY AVAILABLE